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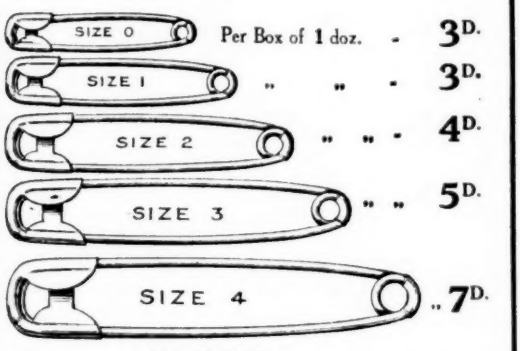


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# A Contribution
ON
# BLOOD TRANSFUSION IN WAR SURGERY

BY L. BRUCE ROBERTSON, B.A., M.B. TOR.,
JUNIOR ASSISTANT SURGEON, HOSPITAL FOR SICK CHILDREN, TORONTO, CANADA; LATE MAJOR, C.A.M.C., AND SURGICAL SPECIALIST, —— CANADIAN CASUALTY CLEARING STATION, B.E.F.

## INTRODUCTORY.

THE history of blood transfusion has been so fully dealt with in recent publications[1] that it is unnecessary to dwell on it at any length. Suffice it to say that it was referred to in the writings of the ancient Egyptians. It is said to have been done in the time of Columbus. Later records show that it was performed by Denys, physician to Louis XIV., and about the same time by Lower in England.

It is only since the investigations of Carrel and Crile that the transfusion of blood has come to be regarded as a definite therapeutic procedure. Subsequent investigations by various workers have shown the enormous value of the introduction of whole blood into the circulation, and furthermore have emphasised its limitations.

The present war has provided the surgeon with a number of conditions which, to be met effectively, must be met promptly. One of the most serious of these is hæmorrhage. On the successful treatment of this condition in a severely wounded patient may depend his chances of recovery.

The medical officers of field ambulances and front line casualty clearing stations are being confronted daily with the problem of dealing with severely wounded patients who are much exsanguined. Under the system at present in vogue on the Western British front, the more technical and, in fact, the greater part of the operative treatment of these cases is being carried out in the clearing stations or, where they exist, in advanced operating centres.

Various methods have been employed in the treatment of acute hæmorrhage.

Amongst these are the introduction into the circulation of salt solutions—normal or hypertonic, colloidal solutions of gum or gelatin in isotonic solutions of salts, and isotonic solutions of inorganic salts—Ringer's, &c. They supply, for a time at least, an increased volume of circulating fluid.

Of these, the gum solutions such as suggested by Professor Bayliss[2] are undoubtedly the most effective, as, on account of their colloidal nature, they remain in the circulation much longer than the normal saline solutions. In the less severe cases they serve to bolster up the flagging circulation until the natural resources of the body assert themselves. But in the more severe cases of acute hæmorrhage and shock they do not supply that particular body tissue the sudden loss of which is largely responsible for the patient's symptoms.

Following upon the direct anastomosis of vein and artery by Carrel, and the introduction of Crile's cannulæ, other methods were introduced, such as the interposition between donor's artery and recipient's vein of a paraffined glass tube (Brewer). Colonel Fullerton's[3] method* is a modification of this.

A further and definite impetus was given to this work in the revival of Ziemssen's method by Lindeman[4] who employed the syringe-cannula technique and placed it on its present basis of efficiency.

Without going into further detail it may be said that the direct methods have been superseded by those involving the transference of blood by an intermediate receptacle, on account of the greater simplicity of technique of the latter, and more especially better mechanical control, and the fact that the amount of blood transfused is definitely known.

## INDIRECT METHODS OF BLOOD TRANSFUSION.

Of the indirect methods there are three in general use at present on the British front: (1) Syringes and cannulæ; (2) paraffined glass containers; (3) anti-coagulants (citrate method).

### *Syringes and Cannulæ.*

A brief reference to the syringe-cannula method, as worked out by Lindeman, is not out of place, as several modifications have been employed.

On this principle a cannula is introduced into recipient's vein and one into donor's vein. I have found it expedient to attach a short piece of rubber tubing to each cannula. By means of 20 c.cm. Record syringes worked in series blood is withdrawn through the donor's cannula and injected into that of the recipient. Between the successive withdrawals or injections of blood, in donor and recipient respectively, a small amount of normal saline is forced through the cannula to clear it of blood and prevent clotting. The syringes and cannulæ at the start may be lubricated by drawing liquid paraffin through them. One operator and one assistant are necessary to transfer the blood, while a nurse is required to flush out each syringe before it is used again.

By this method I have completed a transfusion of almost a litre of blood in 19 minutes from the beginning to end of procedure. The method lends itself admirably to effect the desired purpose and is well under control of the surgeon. The total amount of the blood is outside the body for not more than 15 to 20 seconds, and blood can be transferred slowly or rapidly.

Colonel Primrose and Ryerson,[5] working in Salonica, have used this method with excellent results. It is true that "Record" syringes are expensive, but the procedure can be carried out easily with six, or even four, syringes in an emergency.

Modifications based upon this method have been used successfully.

Unger[6] has devised an ingenious 5-ways stopcock† so constructed that with a single syringe large amounts of blood can be transfused. Provision is made for flushing out the cannulæ and channels with normal saline. An ether spray is directed on to the barrel of the syringe to prevent clotting (Elsberg[7]).

Other modifications in the shape of stopcocks and valves have been evolved, but in all the prevention of clotting depends largely upon the speed with which the blood, once out of the donor, is passed to the recipient.

### *Paraffined Glass Containers.*

Glass receptacles lined with hard paraffin and having a capacity up to 500 c.cm. were advocated and used by Kimpton and Brown[8] some years ago. Fig. 1 shows one type in present use on the British front. The coagulation of blood by this method of transfusion is retarded by the smooth hard paraffin lining.

FIG. 1.

Modification of Kimpton Tube.

In practice the "Kimpton tube" is sterilised for 20 minutes in an autoclave. Before sterilising a lump of hard paraffin‡ about the size of a walnut, is placed in the tube. On removing the latter from the autoclave with sterile gloves, it is turned about rapidly while hot to ensure uniform lining inside cylinder. Care must be taken that the calibre of the cannular tip is not unduly decreased, otherwise the free flow of blood into the cylinder will be retarded. The receptacle when cool is wrapped in a sterile towel and put away till required.

FIG. 2.

In doing a transfusion with this apparatus the recipient's vein is first exposed, ligated distally, and a short piece of catgut passed beneath the vein proximal to the ligature. A small artery forceps is clamped on to each end of the catgut.

The vein is now opened with scissors by a triangular cut and a "mosquito forceps" attached to the apex of the triangular flap in vein wall. (Fig. 2.) Bleeding from the proximal end is prevented by crossing the catgut strand over the vein, the attached artery forceps hanging down on either side of the arm.

The donor's vein is now exposed, ligatured proximally, and opened in the same way. The cannula end of the Kimpton tube is introduced into vein pointing towards the hand. Constriction slightly below the diastolic pressure is applied below the shoulder. A 480 c.cm. tube fills in about five minutes, but the time will be found to vary with different donors. When the blood has risen to the level of the upper tube the latter is closed by the finger-tip and the constriction released.

The container is now carried to the recipient and the cannula tip introduced into the vein opening. A rubber bulb having been attached to the horizontal tube, air is pumped in and the blood easily forced into the recipient's vein. The container empties much more quickly than it fills. It is important to hold a finger over the recipient's vein proximal to the cannula in readiness to exert pressure as the container is being emptied, otherwise air may be forced into the vein before the cannula can be withdrawn.

If more than one cylinder full of blood (480-490 c.cm.) is required a second cylinder should be used, a swab, wet with saline, being laid over the donor's vein and bleeding controlled by the strand of catgut and attached forceps. Lieutenant-Colonel Cabot[9] has stated that each tube may be used several times during a transfusion. There is an objection to this from the standpoint of asepsis.

By this method I have removed 490 c.cm. of blood from the donor in four and a half minutes and injected it into the recipient in a little over a minute without the latter showing the slightest discomfort. The limit of safety as regards clotting is from 10 to 12 minutes after the blood first enters

* Schäfer used a similar method some 38 years ago, but did not employ a paraffin mixture to coat the inside of the tubes. He stated at that time that his was practically the same method as Lower had used many years before.

† It is interesting to note that 100 years ago Dr. James Blundell presented before the Medico-Chirurgical Society of London a stopcock and syringe for transfusion of human blood. In experimental work on dogs he transfused up to 6 ounces with successful results. At that time he intimated that the device could, and probably would, be improved and used in clinical work.

‡ A mixture of equal parts of hard and liquid paraffin has been found to give an efficient coating, and is easier to manage.

the tube. These tubes may be obtained from Gentile, of Paris, or Baird and Tatlock, of London.

*Anti-coagulants (Citrate Method).*

Some three years ago Hustin,[10] Weil,[11] and Lewisohn,[12] working independently, evolved a method of blood transfusion in which sodium citrate was used to retard clotting.

Weil found that blood containing 0·5 per cent. sodium citrate would remain unclotted for several days if kept cold. Lewisohn uses blood containing 0·2 per cent. citrate, but other observers have stated that they had encountered clotting with this amount. I have found that blood containing between 0·2 and 0·3 per cent. gives no difficulty as regards clotting, but have not attempted to keep it for more than an hour before giving it to the recipient. It has been found that 5·0 g. could be injected into the circulation without toxic result, and with very little effect on the coagulation time. In fact, following a citrate transfusion the coagulation time has been found to be shortened for 24 hours.

In practice the following method has been used:—

Place 60 c.cm., or a little more, of a sterile 2 per cent. sodium citrate solution (in normal solution) in a sterilised glass receptacle graduated up to 500 c.cm. After constricting the donor's arm plunge a large-bore hollow needle into an elbow vein. Allow the blood to flow into the citrate solution and stir meanwhile with a glass rod to ensure thorough mixture. Allow the blood-flow until the 500 c.cm. mark has been reached, but no farther. If more blood is required set the first container in a basin of warm water and fill a second one, after putting in the required amount of citrate solution. The citrated blood is now strained through sterile gauze (to remove froth) and introduced into the recipient's vein with an ordinary saline infusion apparatus at the rate of about 1000 c.cm. in 20 minutes.

A large-bore needle is essential to ensure a free flow of blood from the donor's vein. The concentration of citrate should never be lower than 0·2 per cent. in the blood.

Weil's[13] method at present is to use 5 c.cm. of a 10 per cent. solution in a 100 c.cm. glass cylinder. Two cylinders are used, and when one is filled it is shaken up and emptied into a large receptacle which will contain the total amount of blood to be given. This method ensures probably a more continuously even mixture of citrate and blood.

From an experience of little more than a dozen cases done by the citrate method my impression was that the response, as shown by fall in pulse-rate and rise in blood pressure, was not as immediate as with transfusions with unmodified blood (syringe method, &c.).

ADVANTAGES AND DISADVANTAGES OF THE INDIRECT METHODS.

In considering the comparative values of these methods at the front it must be admitted that the syringe method requires an operator, assistant, and nurse all "scrubbed up." The others require only the operator scrubbed up.

In the syringe method a certain amount of familiarity with syringes is necessary and to get the best results there must be good "team work." But it has this advantage that, in the event of the bloods not being compatible, the procedure can be stopped after the injection of the first syringeful of blood with no further loss to the donor. Also the blood is withdrawn less quickly than with the other methods, and I have found it possible to get more blood by this than by the other methods with the same amount of disturbance to the donor. It is true that there is probably a greater amount of psychic disturbance to the donor with this method, particularly if he is allowed to watch the transfer of blood to the recipient.

The paraffined tube method necessitates, of course, the possession of these tubes, and they are somewhat difficult to procure.

The lining of the tube with hard paraffin is a more or less difficult technical procedure. The tubes are very fragile and when broken cannot easily be extemporised. Should mishaps occur the whole of the contents may be lost. It necessitates cutting on the donor's vein, a slight disadvantage, and one not necessarily present in the other two methods. Its advantages are that it is clean, comparatively rapid, if the prepared tubes are at hand, and can be done by one operator with unsterile assistants.

The citrate method is by far the simplest, but up to the present time there has not been sufficient evidence at the front to show that it is pre-eminently the method of choice.

Professor Schäfer[14] states that sodium citrate introduced into the blood stream causes a marked fall of blood pressure, but does not say in what dose the salt will produce this effect.

Garbat[15] gave repeated injections of sodium citrate up to 2 g. in several patients, and apart from a slight chill and rise of temperature 1 to 2 hours later no untoward results were observed.

Archibald,[16] working on the British front, expressed his satisfaction with the citrate method for both primary and secondary hæmorrhage.

These, then, are the main advantages and disadvantages of the indirect methods in common use on the British front. Whatever the method adopted, it must be clearly understood that the saving of a few minutes at the expense of asepsis and the risk of faulty technique is much to be deplored. One should be prepared to use that method best suited to the case and to the condition present.

INDICATIONS FOR BLOOD TRANSFUSION.

The broad indications for blood transfusion are based on the fact that transfused blood is the best substitute for blood lost in acute hæmorrhage.

It is impossible to lay down hard-and-fast rules governing blood transfusion. Increased experience in the procedure will give the individual surgeon definite impressions of the type of cases which will benefit by it. But there are certain working rules which may be discussed here.

The types of cases in war surgery in which it is most commonly indicated are:—

(1) Acute hæmorrhage, either, (*a*) primary, or (*b*) secondary.
(2) Severe anæmia from (*a*) small repeated hæmorrhage or oozing, (*b*) long-continued sepsis.

*Primary Hæmorrhage.*

This condition, as we see it at the front, is always associated with some degree of shock. These cases practically always require operative measures to control hæmorrhage and combat infection.

The hæmoglobin index and blood count are of little value in determining the treatment. The pulse-rate varies within wide limits, and it is not uncommon to see a patient in profound collapse from shock and hæmorrhage with a pulse-rate little over 100, particularly if morphia has been exhibited in full doses.

A wounded man who has lost much blood and has a blood pressure below 90 mm. Hg is not a good subject for operation. With a blood pressure below 70 mm. Hg he is in a precarious condition and unfit to withstand any operative measures. It is a significant fact that one seldom sees a patient admitted to a clearing station with a blood pressure below 50 mm. Hg unless that patient is *in extremis*. It would appear that a blood pressure below 60 mm. Hg is not compatible with life for more than a short period.

A rapidly falling blood pressure is very significant and the supervention of air-hunger is always of diagnostic importance. A systolic blood pressure below 70 mm. Hg is a good indication for transfusion. The degree of shock, however, must be taken into consideration, and if it is evident that the blood loss is but slight the recognised antishock measures may be tried. But close observation of the case is essential and preparations for the transfusion should be made in the meantime.

The benefit of blood transfusions has its limitations and it should not be done indiscriminately. The surgeon in an individual case must always ask the question, Are this man's wounds such that, having made up to a great extent for his loss of blood, he has any chances for recovery? A broad view on this point, however, must be maintained. I have seen many almost hopelessly severe cases recover after blood transfusion and operation.

Taylor[17] cites the case of a youth of 19 who arrived at the clearing station in an almost moribund condition from a shattered thigh and gas gangrene, extending upwards in the buttock. Immediate blood transfusion and disarticulation at the hip-joint (under gas and oxygen) saved him. The patient arrived in England some weeks later in good condition.

A hundred years ago Dr. James Blundell[18] wrote: "Promptitude in operating (transfusion of blood) is no inconsiderable advantage for the apparent death from hæmorrhage soon becomes irremediable," the truth of which is daily apparent to the surgeons at the front.

Loss of blood intensifies to a very great degree the amount of shock produced by trauma, and in the majority of such cases the immediate issue depends upon the control or elimination of the effects of hæmorrhage.

*Acute Secondary Hæmorrhage.*

In these cases the severe traumatic shock seen in the primary cases is absent, but the patient has been weakened by absorption of toxins and is not in condition to withstand a large blood loss.

The same indications, however, hold good, and it is of great importance that his blood loss should be made up on account of the toxæmia present and the probability of an operation being necessary to control the bleeding point.

As Bernheim[19] says, the limits of bleeding should be recognised, and a very thoughtful attitude adopted towards the loss of blood from one cause or another. At times all signs fail (i.e., indications for transfusion), and it must be left to the experience and judgment of the individual surgeon. "When in doubt—transfuse."

*Small Repeated Secondary Hæmorrhages, or Persistent Oozing of Blood.*

There is a type of case in which small repeated secondary hæmorrhages or persistent oozing may occur. It appears that in some of those cases the coagulation time outside the body may be but little delayed, but the seepage continues. Small transfusions (250–500 c.cm.) are of immense benefit and often check the bleeding immediately. The fresh blood has a very definite hæmostatic effect and also increases the resistance of the patient to sepsis, apparently by the addition of complement, antibodies, &c. The following case is a typical instance of this:—

CASE 1.—Sergeant G., wounded Sept. 23rd, 1915; admitted to base hospital on Oct. 6th, under care of Major J. N. Gunn, C.A.M.C. Multiple shrapnel wounds of chest and left arm; T. 102°–104° F. Four days later thoracotomy was performed for empyema. By Oct. 22nd there had been two severe secondary hæmorrhages from the chest, after which there was continuous oozing.

By Oct. 30th the condition had become much worse; salt solution subcutaneously caused no lasting improvement. R.B.C. 1,600,000. Blood transfusion (500 c.cm. by syringe-cannula method) was

performed; after first 80 c.cm. patient complained of some abdominal discomfort and pain in affected lung; pupils became dilated and face flushed. Operation was suspended for ten minutes, and then, as symptoms had subsided, further injections of blood were carried out at moderate speed.

That evening patient had his first good night's sleep without aid of morphine. On following day R.B.C. 2,500,000; general condition much improved; no bleeding from wounds. His condition continued to improve, and a month later he was evacuated to England. Further accounts from the patient show an uneventful recovery.

The reaction at beginning of transfusion may have been due to the introduction of a foreign protein. No serious incompatibility was present, as no later bad effects were seen.

*Long-continued Sepsis: "Vaccination Transfusion."*

Blood transfusion is of less value in chronic sepsis apart from relieving the anæmia, and thus indirectly combating the infection.

The fresh blood is a stimulant to the starved hæmatopoietic organs, as is shown by the secondary rise in red blood count and hæmoglobin a few days later. "Where the anæmia is secondary to sepsis it may be regarded as an indication of a process of deterioration taking place in the blood."[3] This state of affairs results in a "vicious circle" and unless the sepsis or the anæmia is relieved the patient's condition must become progressively worse.

With a hæmoglobin reading of 40 per cent. or under the persistence of the anæmia is harmful in the presence of sepsis. A hæmoglobin reading of 20 per cent. or under is a definite indication for transfusion.

The field of "vaccination transfusion"—that is, transfusion of immunised blood—is still undeveloped in war surgery. There is a scope for investigation in this direction, and it is to be hoped that the opportunity will not be allowed to pass.

In civil life good results[4] have been obtained in transfusing severely ill typhoid fever patients from donors who had recently recovered from the same disease.

Heyd[20] reports a successful result in a case of endocarditis with a positive *Streptococcus viridans* blood culture. The donor received successive doses of vaccine prepared from the organism. The patient had six small transfusions (200 to 300 c.cm.) at intervals and at the end of three months was clinically cured with blood culture negative.

Ransom Hooker[21] reports four cases of staphylococcus septicæmia treated by transfusion of immunised blood in conjunction with the ordinary operative measures indicated in each case. The donors were inoculated with vaccines made from the infecting organism of the patients. The amounts transfused ranged from 100 to 500 c.cm. of blood. He summarises his work as follows:—

(1) Chronic infections: The general conclusion to be drawn is decidedly in favour of the efficacy of immunised blood transfusions in chronic staphylococcus septicæmia, and especially in those which complicate bone conditions. In this class of case there is usually ample time to prepare a suitable donor by administration of vaccines, but if the anæmia is pronounced no time should be lost in performing a preliminary transfusion of normal blood.

(2) Acute infections: Early blood cultures and an immediate start to immunise a donor are of the utmost importance in these cases. If urgent it is better not to wait for full immunisation, but to give the first transfusion even after one dose of vaccines. The effects of transfusion by study of blood counts, blood cultures, and general symptoms should be observed and the operation repeated as indications arise, being mainly guided by the bacteræmia. If the patient has a fairly good blood volume with a high bacterial blood count there should be no hesitation in removing a considerable amount of blood by venesection just before transfusion

## TIME FOR BLOOD TRANSFUSION.

*Acute Hæmorrhage.*

If the bleeding point can be controlled, as in the case of a shattered leg or thigh, the best time is as soon as the patient can be prepared for the transfusion. If previous operative interference is necessary—for example, in intra-abdominal hæmorrhage—blood transfusion may be carried out before the patient leaves the operating table.

Some observers have preferred, where possible, to undertake the necessary operative measures first and transfuse afterwards, as the patient gets the full benefit of the transfused blood without loss at operation. This procedure, however, cannot be unreservedly recommended, as, though no doubt it can be done with comparative safety in certain cases, the operative risk is frequently too grave to justify delay in transfusion.

Clinical and experimental[22] observation appears to show that some degenerative changes occur in the organism when the exsanguinated condition persists for more than a few hours. If the patient is allowed to reach this stage he does not derive the same benefit from the transfusion as if given earlier.

As the patients requiring blood transfusion are often in a state of considerable shock it is preferable, if possible, to carry out the procedure at the bedside, avoiding unnecessary moving.

In cases of severe primary hæmorrhage from wounds of the extremities it is better to do the transfusion as early as possible and allow the patient to rest for from one to four hours before carrying out operative measures, particularly if the condition on admission has been very grave. This interval and the supply of fresh blood assist very considerably to eliminate the symptoms of shock. Owing to the nature of the wounds, however, it is often impossible to wait and operation must be carried out immediately after transfusion.

Primrose has found in civil practice that severely exsanguined patients, with symptoms due only to hæmorrhage and not to trauma, do very well if operated upon immediately after blood transfusion.

*Anæmia from Persistent Oozing or Sepsis.*

In these cases the surgeon must be guided by the condition of the individual case.

A hæmoglobin reading below 40 per cent. should put the surgeon on his guard. If it is steadily falling below this, with a corresponding decrease in the red blood cell count and there are no signs of improvement in the septic condition of the wounds, transfusion should be done. It is in such conditions that transfusion with immunised blood is reported to have given very good results. As a rule, small transfusions (200–500 c.cm.), repeated at intervals if necessary, are indicated instead of single massive doses of blood.

## AMOUNT OF BLOOD TO BE TRANSFUSED.

This depends partly upon the giving capacity of the donor and in some cases the receiving capacity of the patient.

A small recipient will require proportionately less blood than a heavily built patient to produce the same effect on pulse and blood pressure.

In severe primary hæmorrhage, where the loss of blood is considerable and the shock severe, massive transfusion (800–1200 c.cm.) will give the best results. Where small but repeated secondary hæmorrhages occur or persistent oozing is present 250 to 500 c.cm. of blood will produce a definite hæmostatic effect and stimulate the hæmatopoietic organs. These smaller amounts, repeated at intervals, are indicated in the secondary anæmia of toxæmia.

Further investigation is necessary to determine the fate of the transfused blood.

In transfusion for certain of the hæmorrhagic diatheses it has been found that the platelets do not remain in the circulation for more than a short time. In cases of transfusion where recovery has taken place I have observed no clinical evidence to show that the blood is destroyed quickly or at all. It is more likely that it is gradually replaced just as any other homologous graft would be. But for the time immediately subsequent to the transfusion it appears to carry on the functions of ordinary blood.

## IMMEDIATE RESULTS.

In cases of severe primary hæmorrhage accompanied by shock blood transfusion frequently produces an immediate and almost incredible improvement.

The change from a pallid, sometimes semi-conscious, patient, with a rapid, flickering pulse and low blood pressure, to a comparatively healthy-looking, conscious, and comfortable patient, with a slower and fuller pulse, is dramatic evidence of the value of the transfused blood. The immediate result of the transfusion is that it places the patient more on a footing with a man similarly wounded who has not lost more than a moderate amount of blood.

In cases of persistent oozing the bleeding is checked almost immediately and the anæmia much improved. "In a patient suffering from sepsis and anæmia, if sepsis is the chief feature and the anæmia secondary to it, little immediate change may be noted. Nevertheless, in a few days very obvious improvement may occur apparently as the result of the transfusion" (Fullerton).[3]

## SELECTION OF A DONOR.

A robust and healthy donor can withstand the loss of from 700 to 1000 c.cm. of blood without more than temporary disturbance.

Previous inquiry with regard to syphilis, malaria, and tuberculosis particularly should be made and, if feasible, a Wassermann test done. Blood-grouping tests should be performed if possible. I have endeavoured to use as donors only those men in healthy condition who are unfit for duty owing to sprains, minor fractures, &c. The use of these men as donors does not prolong their convalescence. It is inadvisable, both from a military and clinical point of view, to use the "slightly wounded" men. Even a "slightly wounded" man straight from the trenches withstands the loss of blood poorly as compared with a man with a sprained ankle, due, I believe, to "shock of battle" in the former.

The effects of loss of blood will show themselves at different times in the donor according to his weight, robustness, the amount of blood and the rate at which it is removed, and the particular method employed. An impressionable donor will exhibit symptoms earlier than one of phlegmatic temperament. Twenty-four hours after giving up the blood the donor appears as well as ever, the pulse may be slightly increased, and as a rule he complains of some weakness and lassitude. Dreyer and Bazett[3] have found that the normal status of the donor is completely regained in three weeks.

## POST-TRANSFUSION REACTIONS.

In the cases reported here preliminary blood-grouping tests were not possible. Many of them, therefore, were probably "cross-transfusions," and the post-transfusion reaction may have been due to this factor. In the great majority of these cases the reaction, when present, consisted of a chill with a subsequent transient rise of temperature. Hæmoglobinuria was observed in only three cases, all of which were fatal.

In a large series of blood transfusions in civil practice Meleney, Stearns, Fortuine, and Ferry[23] found that in about 63 per cent. of their transfusions there was some degree of reaction in the shape of chill and rise of temperature. They used either whole or citrated blood (containing 0·5 per cent. sodium citrate). The reactions were not more frequent with the citrated than with the whole blood. Blood groupings in all cases were done and no cross-transfusions considered in this estimate. The majority of reactions occurred (1) in recipients in comparatively good condition; (2) in those which received the larger amounts of blood (6·0 c.cm. or more). "It is evident that the reaction is dependent to a considerable degree upon the ability of the body to respond to the introduction of a foreign substance, and the factor of

incompatibility which is responsible for reactions in cases which have been properly grouped is something therefore, which is not detected by the ordinary method of testing for agglutination and hæmolysis."

Other workers report a much smaller percentage of post-transfusion reactions in properly grouped cases (10 per cent. to 22 per cent.).

These post-transfusion reactions, then, may be due to antibodies foreign to the recipient or the splitting of foreign protein by the recipient's plasma. Satterlee and Hooker,[24] in a very carefully considered paper, have advanced a very similar hypothesis, and also suggest that reactions may be due to incipient coagulative changes in the new blood due to the physical influences to which it is subjected in the process of transfer. If this latter were true one would expect to find reactions after every indirect transfusion, but this is not the case.

### DANGERS OF HÆMOLYSIS.

Where preliminary blood-grouping tests[25] have not been done reactions due to incompatibilities of the two bloods must be reckoned with. Serious incompatibility may usually be recognised early by making a preliminary injection of 15 to 20 c.cm. of donor's blood into the recipient's circulation. If no symptoms occur within one to two minutes the bloods may be regarded as sufficiently compatible and the transfusion may be proceeded with.

Symptoms of incompatibility are: (1) Inspiratory distress (perhaps preceded by pain in the back); (2) dilatation of pupils, sweating, restlessness; (3) abdominal pain (accompanied possibly by vomiting or purging). These, occurring after the "physiological test," should pass off in a few hours.

Cabot and Dennis Crile[9] record three such cases, two of which were transfused later from different donors and recovered. They also state that sudden urticaria is a sign of dangerous incompatibility. I have observed this in only one case, who showed slight reaction following transfusion and after operation recovered without event.

Ottenberg and Kaliski[24] found that "febrile reactions or urticaria and other skin eruptions occur after about 10 per cent. of transfusions, irrespective of hæmolysis or agglutination, and are not due to fibrin ferment or blood platelet destruction. These reactions, however, are never serious, and the patients have done well in spite of them."

Late symptoms in the cases of serious incompatibility are jaundice, hæmaturia, persistent oozing from wound surface (i.e., loss of coagulability), followed in the severe cases by collapse and death.

In the case of Sergeant G., cited above, dilatation of the pupils, abdominal pain, and restlessness occurred early in the transfusion, but passed off quickly and no further trouble ensued. It is evident, therefore, that incompatibility may exist in a degree sufficient to cause immediate and transient symptoms, but not a lasting ill-effect.

In the three fatal cases from hæmolysis recorded in this paper one was done with the Unger three-ways stopcock, which does not allow of much delay in getting the blood across; the second was done immediately after operation and the anæsthetic masked any symptoms present; the third was an early case done by the citrate method and the reaction was not judged as due to serious incompatibility.

That cross-transfusions (i.e., between different blood groups) can be done safely in many cases is shown by the number of recoveries in this series, as it is not conceivable that donor and recipient were always of the same group.

The explanation of this, as given by Moss,[27] is that antihæmolysins possibly are present in the other blood and neutralise the action of the hæmolysin. He believes that the action of the hæmolysin is reduced or nullified by dilution. Transfusions, then, in which the donor's serum is agglutinative for the recipient's corpuscles may often be carried out without symptoms of hæmolysis occurring and with definite benefit to the patient.

Ottenberg and Kaliski[26] report four cases in which the donor's serum was agglutinative§ to the cells of the recipient. There were no untoward symptoms in any of these transfusions. Numerous blood examinations in two of these cases revealed no phagocytosis of red cells. In three other cases in which the patient's serum was agglutinative to the donor's cells one suffered an intense hæmaturia. The other two died in 8 and 12 hours respectively. Their bloods showed phagocytosis of broken red cells.

### SUMMARY.

The following cases,¶ a number of which have been reported,[28] are only those of which I had direct personal supervision. A number of other cases done in this period at this station brings the total to a little over 100.

To estimate accurately the value of the procedure at the front several factors other than the purely clinical must be considered, notably the distance of the station from the firing-line, and the difficulties and time of transport of the wounded to the station. All the cases of primary hæmorrhage, with one exception, were seen at the same station.

In the earlier part of this period the station was some eight miles from the nearest point of a salient. There was very difficult ground to cover in bringing back wounded to the advanced dressing stations. The bad weather and muddy ground involved a great deal of disturbance to the wounded men. The cases arrived at the clearing station in from 6 to 12 hours (later up to 24 hours), and by this time the degree of shock and collapse was increased.

§ Hæmolysis is always preceded by agglutination. The presence of agglutination in a test for blood-grouping is regarded as the sign of incompatibility.

¶ Owing to the exigencies of space it has not been found possible to publish the notes upon the author's 68 cases which he transmitted.

In the later part of the period almost continuous and heavy fighting was in progress, and as the troops advanced greater difficulty was experienced in getting the wounded back from the front line. An endeavour was made at this time to advance the operating stations, but the locations were rendered untenable by enemy shell-fire. Conditions were such that blood-grouping tests could not be carried out, and the transfusions to be carried out at all had to be done without these tests.

The list comprises 68 cases in the following classes:—

| | |
|---|---|
| (1) Primary hæmorrhage | 57 cases. |
| (2) Secondary hæmorrhage | 9 ,, |
| (3) Severe carbon-monoxide poisoning | 2 ,, |

*Primary Hæmorrhage (57 Cases).*

| | |
|---|---|
| (*a*) Life saving (evacuated to base hospital in good condition)* | 36 cases |
| (*b*) Immediately beneficial but died from shock, 8 cases; gas gangrene, 5 cases; capillary bronchitis, 1 case; pulmonary embolism, 1 case | 15 ,, |
| (*c*) No benefit | 4 ,, |
| (*d*) Harmful (hæmolysis) | 2 ,, |

* In the reports returned from the base the deaths of three of these cases were noted from the following causes: (1) sepsis two weeks later; (2) empyema following pneumonia two months later (the progress of wounds had been slow but good); (3) sepsis following severe tetanus three months later.

*Secondary Hæmorrhage.*

Nine cases of this type received blood transfusion; six recovered. Of the three that died, one died of hæmolysis (following a second transfusion), one of gas gangrene three days after transfusion, and one of streptococcus septicæmia one month after transfusion. The last two cases had derived immense benefit from the transfused blood before they succumbed to the infection.

*Severe Carbon Monoxide Poisoning.*

The two cases in which transfusion was done were amongst a number of men buried in a dug-out in which certain combustible material caught fire. Venesection, with the removal of 1000 c.cm. of blood in two stages, gave moderate relief, but their condition remained grave and they were still of a bluish-grey colour. The blood was almost black and of a peculiar syrupy consistency. Blood transfusion (1000 c.cm.) made no immediate improvement, but the following day improvement was evident and the cases progressed to recovery.

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# ON THE ACIDOSIS OF SHOCK AND SUSPENDED CIRCULATION.

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THE suggestion that acid intoxication is an element in surgical shock we owe to Crile. For the establishment of the fact we are indebted to Cannon. His observations have shown that we have in the wounded man affected by shock a man suffering from a severe, sometimes an extreme, acidosis. This discovery has therapeutic value; and it is of utility also as directing attention to a fundamentally important element in our vital machinery which has up to now been only very imperfectly explored, and which medicine has, one may say, completely left out of account. I refer to the large output of acid waste products from the body, and the provisions by which, despite that, the alkalinity of the blood is maintained.

Let us go to work by enquiring in connexion with the wounded man—To which of all the pathological agents brought to bear on him is his acidosis due? Whence have come the waste products which have produced that acidosis? What factors have influenced their convection into the blood stream? And how soon after it reaches the circulation is the acid disposed of? These problems considered, the question will come up as to whether the type of acidosis encountered in the wounded is not encountered also in other morbid conditions.

The outstanding feature in the symptomatology of shock being the fall of arterial tension—and interference with the circulation at the periphery—we may inquire first into the effect of arresting and reopening that circulation. In the experiments set out in Table I. below we anæsthetised rabbits with ether, clamped one or several main arteries, and removed the clamps after varying intervals—taking from time to time samples of blood for the measurement of the alkalinity.

TABLE I.

| No. of rabbit. | Particulars of procedure. | Time when blood samples were taken. | Alkalinity. |
|---|---|---|---|
| 1 | Both femoral arteries and both carotids occluded for 1 hr., then unclamped. Animal placed in warmth beside stove; ½ hr. after reopening circulation air-hunger and convulsive seizures developed. Death. | Immed. before removing clamps from vessels ... ... ... ... | N/40 |
| | | During convulsions ... | N/80 |
| | Abdominal aorta and both carotid arteries occluded for 1-hr. then unclamped. Recovery. | Immed. after occluding the vessels ... ... | N/40 |
| | | Soon after removing clamps ... ... ... ... | N/60 |
| 3 | Carotid arteries and external jugular veins, also femoral arteries and veins occluded for 1½ hrs., then unclamped. Recovery. | Before commencement of operation ... | N/30 |
| | | Immed. before removing clamps from vessels ... ... ... ... | N/30 |
| | | 40 min. after removing clamps ... | N/60 |
| | | 18 hrs. afterwards ... | N/50 |
| 4 | 1 carotid artery and external jugular vein, 1 subclavian artery and vein, also 1 femoral artery and vein, occluded for 1½ hrs., then unclamped. Recovery. | After anæsthetising... | N/50 |
| | | Immed. before removing clamps from vessels ... ... ... ... | N/45 |
| | | 35 min. after removing clamps ... | N/60 |
| 5 | Abdominal aorta occluded for 1 hr., then unclamped. Killed. | Before commencement of operation ... | N/35 |
| | | Immed. before removing clamp ... ... | N/40 |
| | | Few min. after removing clamp* ... | N/55 |

Immed., immediately. * Blood from inferior vena cava.

The method employed for this was that of direct titration in capillary glass tubes with dilutions of standardised sulphuric acid, using sensitive red litmus paper as an indicator.[1] One of the advantages of this method—and it is for the purpose here in view a great advantage—is that of taking no cognisance of $CO_2$—i.e., of *expirable acid*—and measuring only the *non-expirable acid* conveyed into the blood. (See Table I.)

We see in these experiments that when an artery is clamped and afterwards unclamped a very appreciable quantity of a non-expirable acid is conveyed into the blood stream. The same effect will, of course, be obtained with a ligature, tourniquet, or Esmarch bandage. It will be obtained, also, whenever the arterial pressure sinks away and afterwards recovers. For when we have collapse of the circulation, the blood stream is cut off from the periphery and metabolic exchanges are arrested; and when the blood pressure is restored capillary blood-vessels are reopened and the metabolic exchanges fallen in arrear are resumed.

Our next series of experiments has reference to the effect of cold immersion. (See Table II.)

TABLE II.

| No. of rabbit. | Particulars of the procedure. | Derivation of the blood sample and when it was taken. | Alkalinity |
|---|---|---|---|
| 1 | Ice-bath for 40 min., animal then placed in hot bath for 5 min., afterwards kept in incubator at 37° C. After 1½ hrs. animal's condition very satisfactory and after 3¼ hrs. recovery apparently complete. | Before ice-bath (ear) ... ... | N/35 |
| | | Immed. after ice bath (F.v.) | — |
| | | Immed. after hot bath (F.v.) | N/60 |
| | | 1½ hrs. after (ear)... ... ... | N/60 |
| | | 3¼ hrs. after (ear)... ... ... | N/35 |
| 2 | Ice-bath for 40 min. Rectal temp. went down to 15° C. and animal died from collapse few min. after being taken out of bath. | Before ice-bath (ear) ... ... | N/35 |
| | | Immed. after bath (F.v.)... | N/60 |
| | | Soon after death (Sup.V.C.) | N/100 |
| | | Blood from Vena Portæ ... | N/80 |
| 3 | Ice-bath for 20 min.; animal then left wet at room temp. After lapse of 20 min. air-hunger and tetanic spasms developed and animal quickly died. | Before ice-bath (ear) ... ... | N/35 |
| | | Immed. after bath (F. v.).. | N/60 |
| | | At death, from Inf. V.C.... | N/300 |
| | | Blood from Vena Portæ ... | N/200 |
| 4* | Ice-bath for 15 min.; animal then placed in hot bath for 15 min. and afterwards kept in incubator at 37° C. Its condition showed little improvement up till 3½ hours after, when it was killed. | Before ice-bath (ear) ... ... | N/35 |
| | | Immed. after ice-bath (F.v.) | N/60 |
| | | Immed. after hot bath (F.v.) | N/60 |
| | | After 3½ hrs. at 37° C. (F.v.) | N/50 |
| 5 | Ice-bath for 15 min., then hot bath for 7 min., and kept afterwards in incubator at 37° C. for 3½ hrs. Animal's condition became satisfactory after ¼ hr. in incubator. | Before ice-bath (ear) ... ... | N/35 |
| | | Immed. after ice-bath (J.v.) | N/80 |
| | | Immed. after hot bath (J.v.) | N/100 |
| | | ½ hr. afterwards ... ... ... | N/100 |
| | | 1 hr. later ... ... ... ... | N/80 |
| | | 3 hrs. later ... ... ... ... | N/35 |
| 6 | Ice-bath for 20 min. Animal then left lying wet at room temp.; it died after 6 hours. | Before ice-bath (ear) ... ... | N/35 |
| | | 5 min. after ice-bath (J.v.) | N/80 |
| | | 20 min. later... ... ... ... | — |
| | | 1½ hrs. later ... ... ... ... | N/60 |
| | | 3¼ hrs. later ... ... ... ... | N/120 |

F.v., femoral vein. J.v., jugular vein. Sup. and Inf. V.C., superior and inferior vena cava. * Half-grown.

It will be seen that there is a broad similarity between these results and those set out in Table I. There are, however, differences. *In the first place*, the acidæmia is here much greater. *Secondly*—no doubt in correlation with the fact that the circulation in the limbs is not immediately arrested by the cold immersion—the acidæmia is already manifest when the animal is removed from the ice-bath. And, *thirdly*, when we here test the muscle (we do this by placing a piece of washed extirpated muscle on red and blue litmus paper) we find it definitely acid instead of alkaline as normal muscle, or amphoteric as muscle extirpated after simple occlusion of the artery.

*Resuscitation acidosis.*—Passing to the effect of bringing back the circulation, we see in Table II. that this increases the acidæmia, and that the blood returning from the muscles is more acidosed than the blood taken from the right heart or vena portæ. And concurrent examination of the muscle reveals that, as the acidosis of the blood increases, that of the muscle decreases until its normal alkaline reaction is restored. A further point of practical import, brought out in connexion with rabbits 1 and 5, is that the animals, when they have to all appearance got over the effects of their cold immersion, may still be definitely acidæmic. It is shown in the table that this acidæmia disappears after a few hours. This reversion to the normal may be safely assumed to be due to the acid being burned off in the system.

[1] Wright: Technique of the Teat and Capillary Glass Tube. London: Constable.

*Acidosis from hæmorrhage.*—There would have suggested itself for study next the question as to whether hæmorrhage produces acidæmia. That question has, however, already been settled in the affirmative by the experiments of Milroy,[2] and we can see that in two ways hæmorrhage must favour the development of acidæmia. It carries off sodium and potassium carbonates—the alkali available for the neutralisation of acid. And it depresses the arterial tension, and so interrupts the circulation at the periphery. That, as we have just seen, increases acid production in the muscles.

*Acidosis from violent muscular contractions.*—From the study of the effect of diminishing the supply of oxygen to the muscle we may pass on to study the effect of increasing the metabolism of the muscles to the point at which the oxygen supply becomes inadequate. We can do this by powerful faradisation.

TABLE III.

| No. of rabbit. | Duration of stim. and particulars of procedure. | Derivation of blood sample and when it was taken. | Alkalinity. |
|---|---|---|---|
| 1 | Ligature of femoral vein followed by faradic stim. of leg continued for 10 min. | From F. v., immed. before stim. ... ... ... ... ... | N/35 |
| | | From F. v., immed. after stim. ... ... ... ... ... | N/60 |
| 2 | Ligature of Inf. V. C. in lumbar region, followed by faradic stim. of both lower limbs, continued for 10 min. | Before commencement of experiment (ear) ... ... | N/30 |
| | | From Inf. V. C. before stim. | N/30 |
| | | From Inf. V. C. few min. after stim. ... ... ... ... | N/120 |
| 3 | Faradisation of both lower limbs. | Before stim. (ear) ... ... | N/40 |
| | | Few min. after faradic stim. (ear) ... ... ... ... | N/100 |
| 3 | On the following day faradic stim. was repeated. | Before stim. (ear) ... ... | N/30 |
| | | Immediately after stim. | N/50 |
| | | 10 min. after ... ... ... ... | N/120 |
| 4 | Violent faradic stim. of both lower limbs under general anæsthesia. Severe convulsive seizures occurred and death shortly after. | Before giving anæsthetic (ear) ... ... ... ... ... | N/35 |
| | | Immed. after death: Blood from Inf. V. C. ... | N/120 |
| | | Blood from right heart ... | N/80 |
| | | Blood from vena portæ ... | N/40 |

Stim. stimulation.

We have here, again, an acidæmia (see Table III.). We see from the conditions of the experiment that it is a myogenous acidæmia; and we have confirmation of this in the circumstances that muscle tested immediately after tetanisation is like muscle immediately after cold immersion, definitely acid. And there is also another point of resemblance between the acidæmia of tetanisation and that of arterial occlusion and cold. When it has not been carried too far the acidæmia passes off after a few hours.

*Acidosis of the Wounded Man.*

With respect to the acidæmia of the wounded man we see no room to doubt that it is one into which the factors we have been studying all enter.

As to the nature and genesis of the acid conveyed into the blood we may, as it seems to us, in the light of Fletcher's work on the metabolism of muscle in the presence of oxygen and in its absence, with probability conclude that both in our experiments and in shock as seen in the wounded man we are dealing with an acidæmia produced by lactic acid evolved in muscles which are by reason of arrest or collapse of the circulation cut off from their oxygen supply. When we think the matter over we see that this would be an acidæmia similar in character and derivation to that which develops in the dead body. The importance of recognising the fundamental identity of the acidæmia of shock and that which develops in the dead animal will presently emerge.

Having won our way to this point of outlook, it behoves us to survey further from it. We have to inquire, *first*, whether there may not, under familiar labels which convey no suggestion of acidosis, lurk acidoses of like derivation with those we have been studying; and, *secondly*, whether the acidoses which are associated with certain bacterial infections—and we are thinking here in particular of gas gangrene and Asiatic cholera—may not be wholly or in part myogenous acidoses following upon a collapse of the circulation.

Prospecting in the direction first indicated we are conducted directly to the consideration of chilblains and trench foot.

[2] Journal of Physiology, 1917.

*Indications pointing to Chilblains and Trench Foot being Associated with Acidosis.*

It will be clear that the conditions which we dealt with in our ice-bath experiments and the conditions which produce chilblains and trench foot are essentially the same. From this we may safely argue that when acidosis is examined for in these conditions it will be found. And in the meantime it is in connexion with the relation of acidæmia to gas gangrene and the data set forth in Table IV. (below) of interest to note that there is in connexion with severe trench foot a quite special liability to the development of gas-gangrene infection.

*Acidosis of Anæsthesia.*

The pathology of trench foot and that of general anæsthesia would seem to lie poles apart. But in reality they would seem to have in common the factor of a shutting off of the circulation and a resultant cutting down of oxygen supply from the muscles. This collapse of the circulation will, of course, be specially liable to supervene in severe and prolonged operations, in particular when undertaken in cold operating theatres. In animals inasmuch as with them struggling, asphyxia, and terror are inevitable accompaniments of every administration of anæsthetics—we are already as soon as the animal is under the influence of the anæsthetic confronted by a fully developed acidosis, and this will, if the animal remains in good condition during the anæsthesia, subsequently diminish. We shall, a little later, have to advert again to this "anæsthesia acidosis." For the moment it will suffice to bring out that Cannon has emphasised the important practical points—the risk of superinducing upon the top of a "wound-shock acidosis" an "anæsthesia acidosis"; and the special risk of superinducing asphyxia when administering an anæsthetic to an already acidosed patient.

*Problem of the Derivation of the Acidosis of Gas Gangrene.*

Two years ago one of us pointed out that gas gangrene is characterised by the development of an extreme acidosis; and that gas-gangrene patients who are in a state of collapse and quite inoperable can be resuscitated and brought into a condition to stand operation by the intravenous administration of bicarbonate of soda. The utility of this procedure appears now to be established, and the treatment is widely resorted to. There remains, however, the problem of the source of the acidæmia. In connexion with this it was at the time suggested that the acid was elaborated by the bacillus of Welch. That was based on that bacillus elaborating acid in serum; and on the acidæmia becoming more and more pronounced until death supervened. There did not at the time suggest itself any contributory non-microbial source from which the acid could be derived.

Now, however, in the light of the facts elicited by Cannon and ourselves, the problem has taken a quite different complexion. It has emerged that we must, in addition to acid elaborated by the microbe, take into our reckoning acid elaborated by muscle. That acid would operate first at the source. Converting as it would the alkaline muscle lymph into non-alkaline medium—i.e., in a medium congenial to the bacillus of Welch—it would provide for the infection a favourable point of departure. Again, the acid conveyed into the blood would favour the spread of the gas-gangrene infection. In connexion with this one of us has demonstrated[3] that the fulminating gas-gangrene infection which is obtained in the dead animal is due to acid conveyed into the blood after death; and, further, that a quite similar rapid pullulation of the microbe takes place in blood drawn off from the dead animal after the post-mortem acidæmia has developed. It is therefore conceivable that in those cases where gas gangrene develops during or immediately after shock the favouring factor may be acid derived from muscle. The influence of this factor is shown when we implant graduated quantities of the bacillus of Welch into normal blood and into blood drawn off after tetanisation or cold immersion. The results set out in Table IV. are those of typical experiments.

There is another way in which acid produced in muscle may intervene in gas gangrene. Here it will be intervention, not at the outset of the infection, but at the height of the toxæmia. In that toxæmia we have invariably a collapse of the circulation comparable to that obtained in cold immersion;

[3] THE LANCET, 1917, i., 1.

and to this might not unreasonably be ascribed, at any rate, the rapid progress of the acidæmia.

Confirmation of that idea would seem to be furnished by the fact that very often in gas gangrene when the blood

TABLE IV.

| — | Duration of Incubation. | Amount of culture of *B. welchii* implanted. Washes. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2 | 1 | ½ | ¼ | 1/8 | 1/16 | 1/32 | 1/64 |
| Blood taken from rabbit before ice-bath. Alkalinity = N/55 ... ... ... | 24 hrs. | – | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Blood taken 1½ hours after removal from ice bath. Alkalinity = N/100... ... | 24 ,, | – | +g | +g | +g | +g | +g | +g | +g |
| Blood taken from ear vein of rabbit before faradic stimulation. Alkalinity = N/30 ... ... ... ... | 24 hrs. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 48 ,, | Tr. | Tr. | Tr. | Tr. | Tr. | 0 | 0 | 0 |
| Blood taken from femoral vein after faradic stimulation. Alkalinity = N/100 ... ... ... ... ... | 24 ,, | +g | +g | 0 | 0 | 0 | 0 | 0 | 0 |
| | 48 ,, | +g | +g | +g | +g | +g | +g | +g | +g |

+ = Culture. +g = Culture with gas formation. Tr., Trace.

alkalinity has been brought back to normal and the circulation restored by the administration of alkali we have in a very short time a recurrence of the acidæmia. That recurrence would correspond to the aggravation of the acidæmia observed in animals warmed up after cold immersion.

*Problem of the Derivation of the Acidosis in Asiatic Cholera.*

In connexion with the theory of acidosis developed above it may perhaps be suggested as likely that the acidosis which Rogers has shown to be an important factor in cholera may, like the acidoses we have been considering, be an acidosis due to collapse of the circulation. In the algid stage of cholera when the blood has been inspissated in consequence of the alvine discharges, the circulation is obstructed and the oxygen must be as completely cut off from the muscles and outlying portions of the body as when the body is immersed in an ice-bath.

*Resuscitation Procedures in Shock.*

The ideas which we have been developing have clearly a direct bearing on the policy to be adopted in the treatment of cases of shock—the warming up of the patient, and the intravenous injection of alkali recommended by Cannon.

With regard to the warming up of the patient there is an important distinction to be established. As a prophylactic measure the giving of hot drinks and the application of warmth is assuredly the ideal procedure. For by maintaining the circulation the acidosis will be prevented. No such enthusiastic view can be taken of heat applied as a remedial procedure in fully developed shock. No doubt it is there urgently required for the re establishment of the circulation and the breaking of the vicious circle. But inevitably it will convey into the blood stream additional acid, increasing the acidæmia. Our experiments upon rabbits subjected to cold immersion have very vividly impressed upon us that too rapid resuscitation by warmth—i.e., a too precipitate washing of muscle acid into the blood—may be perilous to life. We venture to suggest that this possibility should, in connexion with resuscitation procedures—and not only in those applied to the wounded—be constantly kept in view And it would seem to us theoretically desirable, for the avoidance of resuscitation acidæmias, wherever possible, to commence procedures by a bicarbonate of soda injection. With respect to the risk of piling up an anæsthesia acidosis on the top of a resuscitation acidosis, it is clear that security against this would be only obtainable by ascertaining, before sending the patient on to operation, that his blood alkalinity had returned to the normal. We would, in connexion with this, point out that the method of measuring the alkalinity of the blood by the method of direct titration in capillary tubes is very easily learned; and that, once a sample of serum has been obtained, the testing takes only two or three minutes.

DEVON QUEEN VICTORIA AND KING EDWARD FUNDS.—At a meeting of the committee of the above Funds the sum of £266 was divided amongst the Devon medical charities.

# PULMONARY FIBROSIS, TUBERCULOUS AND NON-TUBERCULOUS.

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IN all except the acute cases of pulmonary tuberculosis a greater or less degree of fibrosis of the lungs occurs. So striking are the physical signs of fibrotic tuberculosis in an adult of over 40 who has extensive disease, but few symptoms apart from cough and dyspnœa, and so uncommon are cases of fibrosis due to other causes in this period unless accompanied by bronchiectasis that the idea of pulmonary fibrosis has become inseparably linked with that of chronic pulmonary tuberculosis. The physical signs due to the fibrosis are subconsciously regarded as due to the essential tuberculous lesions, with the result that fibrosis found in children of school age is often diagnosed as tuberculous without hesitation and without consideration of the possibility of a cause other than tuberculosis.

In "Fibroid Diseases of the Lung," published in 1894, Sir Andrew Clark, Dr. Hadley, and Dr. Chaplin define and differentiate three groups of pulmonary fibrosis—namely:

"1. *Pure Fibroid, Fibroid Phthisis*, by which we understand a condition in which there is no tubercle.

2. *Tuberculo-fibroid Disease*, a condition which is primarily tubercular, but has subsequently run a fibroid course.

3. *Fibro-tubercular Disease*, a condition in which primarily fibroid disease has become tubercular."

The first group is convincingly proved to be a definite disease, clinically and pathologically, and would doubtless have been accepted and known as such if a satisfactory name had been found for it. After rejecting the terms "fibroid degeneration," "cirrhosis," "chronic pneumonia," "interstitial pneumonia," "melanosis," and "grey induration," the authors chose "*fibroid phthisis*," to contrast it with "*pulmonary phthisis*," the name which they considered would stand for ever unchanged for what is now known as "*pulmonary tuberculosis*." The term "phthisis" is unsatisfactory in itself, and especially when applied to a non-tuberculous pulmonary fibrosis, and the term "fibroid phthisis" is now suggestive of chronic pulmonary tuberculosis with fibrosis, just the reverse of the impression it was originally intended to convey.

*Illustrative Cases.*

In order to attempt to draw attention to non-tuberculous fibrosis of the lungs, the commonest chronic pulmonary disease of childhood, and to the excellent description contained in the work mentioned above three cases are given, illustrating (1) basal fibrosis with a tendency to cure; (2) apical fibrosis; (3) fibrosis with commencing bronchiectasis.

CASE 1.—Patient, a well-developed boy aged 13½, weighing 8 st., complained only of occasional cough and shortness of breath. He gave a history of pneumonia when 2, but his parents had regarded him a healthy, apart from a liability to catch cold, till they were told, when he was 9, that he had tuberculosis. He had been in several institutions during the next three years, and had not attended school since the diagnosis was made. His general health had been decidedly better for the last 18 months.

On examination his heart was found to be displaced nearly 2 inches to the right. The right side of the chest was contracted and motionless. The percussion note on that side was dull from apex to base; patchy, tubular breath sounds were heard over the middle of the upper lobe, and over the lower lobe breath sounds were almost obscured by creaking and explosive râles. A few adventitious sounds were audible at the base of the left lung. The signs had not altered appreciably during the last 2½ years, and he had gained 3½ st. in weight in that time.

His brother, 2 years older, has a similar history, for they had pneumonia together, were diagnosed as tuberculous together, and went to some of the institutions together. He has comparatively few signs, confined to the base of the left lung, and clearly recognisable only on deep breathing. He is at work, and for some time has been free from symptoms.

CASE 2.—Patient, an apparently healthy girl of 12, had measles, followed by broncho-pneumonia, when 5. For several winters she commenced to cough in October. From December to February she used to bring up small quantities of sputum, and never lost the cough entirely till May. During the summer months she was always quite free from any symptoms. She had been diagnosed as tuberculous several years previously, but had attended school till another examination was made, when she was due to enter a higher school. She was then recommended for sanatorium treatment.

On examination slight displacement of the heart to the right was found. The right side of the chest moved less well than the left, but there was little flattening. The percussion note was much impaired on the right side anteriorly and over the upper two-thirds posteriorly. Especially on deep breathing, there were numerous crepitations in the right lung and a few, possibly conducted, at the root of the left.

CASE 3.—Patient, a girl aged 9, rather small for her age and not well covered, was seen first a year ago. Three years previously she had been sent to a sanatorium for a year, but had attended school lately. At times she had a troublesome cough, with expectoration, and had been liable to such attacks all her life.

On examination the left lung presented signs of fibrosis from apex to base, but especially at the latter. In the lower lobe patchy tubular breathing and pectoriloquy were audible. The right lung was apparently free from disease. Since then the signs have remained unchanged. She kept well last summer and gained weight, but has been troubled by cough throughout the winter, and brings up daily about 2 oz. of purulent sputum, sometimes tinged with blood. It is invariably free from tubercle bacilli and is not offensive.

Compare these with a case of tuberculous fibrosis of approximately the same extent.

CASE 4.—Patient, a girl aged 11, was admitted to hospital in March, 1916. She had been well till the previous autumn, when she began to lose weight. By December, 1915, she had developed a troublesome cough with expectoration, and brought up blood on two or three occasions. The cough and wasting had become more pronounced in the three months preceding admission.

On admission she was thin, weighing 3 st. 12 lb., and pale and dyspnœic. She coughed a great deal and brought up about ½ oz. of sputum a day containing tubercle bacilli. Her evening temperature was 100° F. and her pulse-rate 110. On examination there were signs of tuberculosis in the upper part of the left lung, with a moderate degree of fibrosis and with cavitation at the apex. There were also some indefinite signs in the right lung.

With absolute rest and open-air treatment she improved, gaining weight and losing many of her symptoms. On discharge, three months later, her temperature was normal and she had only a trace of sputum. Tubercle bacilli were, however, still present in it. The disease was slightly more extensive, but that on the left side was more fibrotic than on admission.

Eighteen months later she was readmitted moribund.

*Diagnosis.*

On comparing cases of non-tuberculous with tuberculous pulmonary fibrosis, of which the cases recorded above are typical, it will be seen that the diagnosis depends on: (*a*) the history and appearance of the patient; (*b*) the situation of the disease; (*c*) the sputum examination.

(*a*) The non-tuberculous patients almost always give a history of broncho-pneumonia, often following measles or whooping-cough, which has left them liable to intermittent attacks of bronchitis, especially between October and May, but otherwise they enjoy good health, and the discovery of more or less extensive signs of disease in the lungs comes as a surprise to the physician and to the parents, who frequently protest that their children are perfectly well. Later on some contract tuberculosis, becoming cases of fibro-tubercular disease, and others die from pneumonia or broncho-pneumonia. In the remainder progressive contraction of fibrous tissue in the affected lung causes either bronchiectasis or collapse with more or less complete disappearance of symptoms. It is probable that few live beyond 40, but there are definitely established cases in which the disease has been known to exist for upwards of 50 years.

The children with not more extensive signs of fibrosis, but fibrosis caused by tuberculosis and accompanied by tubercle bacilli in the sputum, give a history of persistent and progressive cough for rarely more than a year, though previously they may have had signs of enlargement of bronchial glands or of pleurisy. They are definitely ill, and their parents are not at all surprised to learn that they have tuberculosis. They may improve temporarily, but children under 12 rarely live for more than a year from the commencement of symptoms of tuberculous invasion of the alveolar tissue.

(*b*) Non-tuberculous fibrosis is generally basal; tuberculous fibrosis, if it attacks one base, is invariably present in the upper parts of one or of both lungs. Signs of cavitation indicate dilatation of bronchi in the non-tuberculous, and true cavities in the tuberculous. Bilateral apical signs probably always indicate tuberculosis.

(*c*) The children who prove to be tuberculous almost always bring up sputum, so that it is generally possible to establish the presence of tubercle bacilli. The Victoria Park Hospital records contain a case of tuberculosis of one year's duration in a child of 3½, whose sputum contained tubercle bacilli.

The intermediate group of fibro-tubercular disease is responsible for much of the confusion that exists between the extreme types, for sometimes children who have what appears to be pure fibroid disease of several years' duration are found to have tubercle bacilli in their sputum. After the appearance of the tubercle bacilli the course of the disease approximates to that of true tuberculous fibrosis in children. A careful history of the illness is necessary in these cases before the group of fibroid disease to which they belong can be determined.

*Prognosis.*

It is implied above that chronic pulmonary tuberculosis in children under 12 is a very fatal disease. Between 12 and 14 are found cases more closely resembling the type of early apical tuberculosis of adults and carrying a rather better prognosis. In the Victoria Park Hospital records for the last ten years 55 cases of chronic pulmonary tuberculosis with tubercle bacilli in the sputum were found in children of school age. The results of their progress in hospital are given in the accompanying table.

| | Under 10. | 10-12. | 12-14. | Total. |
|---|---|---|---|---|
| Total ... ... | 11 ... | 11 ... | 33 ... | 55 |
| Improved ... | 4 ... | 6 ... | 11 ... | 21 |
| Worse ... ... | 3 ... | 4 ... | 14 ... | 21 |
| Died ... ... | 4 ... | 1 ... | 8 ... | 13 |

61 per cent., therefore, failed to improve, while in the remainder the improvement was only temporary, as in Case 4. These figures compare unfavourably with those of adult cases of pulmonary tuberculosis. Cavitation was present in 27—i.e., nearly 50 per cent. During the same period 13 cases of fibro-tubercular disease were found, of which 9 improved, 3 became worse, and 1 died.

In 15 months of work at a tuberculosis dispensary 37 cases of well-marked pulmonary fibrosis were seen. Only three of these had tubercle bacilli in their sputum, though a sputum examination was made whenever practicable. One of these, an undoubted case of fibro-tubercular disease, is doing well, the other two have become worse. On the other hand, the remainder have kept well, at any rate during the summer. It may be mentioned that 21 of them had been diagnosed previously as tuberculous.

*Relative Frequency in Adults.*

In adults the relative frequency of tuberculous and non-tuberculous fibrosis is reversed, and only prolonged investigation of a case can justify its inclusion in the non-tuberculous group. Such a case is given.

CASE 5.—Patient, aged 33, was seen in November, 1916, on his return from a sanatorium, where he had been sent as a case of advanced tuberculosis. He had had two bad attacks of "influenza" 15 and 10 years previously and had had cough and expectoration on and off since. He complained of dyspnœa, but had noticed no other symptoms of pulmonary tuberculosis till he brought up about 4 oz. of blood on three occasions in March, 1916. He has signs of extensive fibrosis in the right lung but the apex of the left is quite clear, and some adventitious sounds heard towards the base of the left lung may possibly be conducted from the right side of the chest. Repeated examination of his sputum has failed to show the presence of tubercle bacilli, and he now feels quite well apart from shortness of breath. The signs have not altered in 15 months and his weight has increased.

It is difficult to imagine that pulmonary tuberculosis of such extent could have become arrested by two months' sanatorium treatment followed by a return to the previous occupation.

*The Varying Standards for Diagnosis.*

In children of school age, then, it would seem that non-tuberculous pulmonary fibrosis is much more common than tuberculous, but, even allowing for the inclusion of all cases of pulmonary fibrosis, the high percentages, sometimes greater than 4 per cent., of school children suffering from pulmonary tuberculosis cannot be compared with the 0·1 per cent. or less of other observers. The reason is that different observers have different standards for diagnosis, both in children and in adults.

Tuberculous infection is almost ubiquitous, but resultant tuberculous disease of the alveolar tissue comparatively rare. Commonly in children, and probably frequently in adults, tuberculous disease has developed from an old tuberculous infection, and in doing so has passed through four successive stages, namely:—

1. That of tuberculous processes in the root glands, recognised by laboratory tests.
2. That of changes in the walls of the air passages, said to be (but not proved to be) tuberculous by radiologists.
3. That of early tuberculous invasion of the lung tissue, which may give rise to signs recognisable on examination.
4. That of more or less advanced disease, with tubercle bacilli in the sputum.

The stages overlap to a certain extent, and in any given case the changes may be active or inactive. The stage at which he can diagnose the disease depends on the skill and opportunities of the clinician concerned, but he can rarely make the diagnosis with certainty in any case of Stage 1.

Those who include tuberculosis of the bronchial glands, a common and comparatively curable disease, under

"pulmonary tuberculosis" will obtain very different figures and results from those who reserve that name for Stage 3, and will be classifying together two very dissimilar conditions. It is therefore highly desirable that those who are entrusted with the examination and notification of children of school age should recognise, firstly, that "tuberculosis of bronchial glands" is a diagnosis in itself, and that only confusion can result from its inclusion under "pulmonary tuberculosis"; and, secondly, that well-marked pulmonary fibrosis should not be labelled tuberculous automatically and without a full investigation of the history and general clinical aspects of the case. For though it is important to remove an infectious tuberculous child from school as soon as possible the hasty notification of one who afterwards proves to be non-tuberculous may, by needlessly depriving him of the greater part of his education in school and out of school and by accustoming him to the life and outlook of an invalid, handicap him very seriously when he reaches the age at which he must earn his living.

## INTRAPELVIC ABSCESS,

### A COMPLICATION OF GUNSHOT WOUNDS OF THE BUTTOCK.

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THE cases reported below by Captain George Richardson illustrate very clearly a type or group of gunshot wounds, by no means rare, but to which little attention appears to have been given. In these, after a wound of the buttock or sacral region, there results an intrapelvic infection of insidious course and, for that very reason, often fatal issue.

*Description of Condition.*

It is clearly recognised that wounds of the lower part of the back and of the buttock are in themselves troublesome if not serious.

They are exposed to exceptional risk of infection by intestinal flora. The muscular masses of the gluteal region are prone to gas infection. The position of the wound renders it inaccessible and difficult to dress. Inflammatory swellings and discolourations are more readily overlooked than in most regions, and probably also the mass-s of overlapping muscle produce a tendency to valvular closure of the wound with consequent imperfect drainage. (See Case 4.) The association of these unfavourable conditions is often shown by the occurrence of secondary hæmorrhage, which is difficult to deal with and which again increases the danger of spreading infection.

If now such a wound be associated with a fracture of the pelvis, apart from any mechanical injury to viscera with which we are not here concerned, or if, even in the absence of fracture, infection spreads through the thin bony plate of the ilium or the cancellous masses about the sacrum and sacro-iliac joints (see Case 8) then an abscess may readily be produced on the inner side of the bony cage.

Such an abscess finds full opportunity for extension in the loose cellular tissue which lines the pelvic cavity and may give rise to a large collection of very septic pus, the extent of which bears little relation to the apparent severity of the extrapelvic wound.

The abscess thus produced is now completely shut in on its outer aspect by the bony pelvis, except perhaps for a small "button hole" due to the missile or the fracture. Below its extension is prevented by the pelvic diaphragm. Centrally, it encounters the peritoneum, which here, as elsewhere, forms a powerful barrier against the spread of infection from without. As a consequence of these restrictions the pus tracks upwards and may ascend as far as the perinephric cellular tissue (see Case 7).

Such an abscess produces no marked pressure symptoms.

It is not sufficiently tense to interfere seriously with the patency of the rectum and it has little or no tendency to bulge into or to open into that organ. The bladder is more remote from the collection of pus, and in one case only have I seen vesical symptoms (retention of urine) thereby produced. The peritoneum does not, as a rule, become inflamed. The spinal meninges generally escape owing to their being enclosed in a separate bony canal and not descending below the upper part of the sacrum; and the tension of the pus is insufficient to cause material pain. Hence the only positive symptoms to be expected is the formation of a visible or tangible swelling, and it is a common experience how difficult such swellings may be to detect in the interior of the pelvis.

On the other hand, there is no obstacle to the most serious general infection from an abscess spreading in the loose intrapelvic cellular tissue. Thus we have progressive intoxication, continuous and possibly severe constitutional symptoms, and, unless the condition be recognised and treated, eventual death from general intoxication or from some metastatic affection—usually of the lungs. (See Cases 3, 6, and 8.)

*Diagnosis and Treatment.*

The diagnosis of such a buried intrapelvic abscess may obviously be as difficult as it is important, but its recognition will depend mainly on the remembrance of the fact that it is likely to occur, for which reason this collection of cases, in which it was apparently overlooked until after death, appears to have particular value and significance. If once the possibility or probability of the condition be borne in mind its outstanding feature appears to be that the extrapelvic wound is, or may be, quite satisfactory, *while the general condition of the patient is not.* Thus in all cases of wound of the buttock where the local condition is not unfavourable but the temperature keeps up an intrapelvic abscess must be suspected and sought for.

The treatment consists in evacuation of the abscess on lines not dissimilar to those adopted in dealing with suppuration in the other great bony cavity of the body—the skull—and it is almost as important to explore and "decompress" a suppurative or potentially suppurative condition within the pelvis as within the cranium. Just as with an œdematous scalp wound local operation and probably trephining is essential, so in wounds of the buttock with marked constitutional symptoms, free opening, exploration of the pelvic bones, and, if necessary, the substitution of a large drainage aperture for a small "button-hole" is urgently called for. Evacuation per rectum is neither to be expected spontaneously nor readily effected surgically, while to await prominence of the abscess above the pelvic brim is to await disaster.

The one essential for both diagnosis and treatment is, therefore, not to be misled by the apparently healthy external wound, but to open it up, to enlarge any pelvic aperture, and thereby to drain thoroughly the internal abscess.

*Notes of Cases.*

1. Private P. G.S.W. buttock. Admitted Dec. 19th, 1916. Died Jan. 4th. Penetrating shell wound of right buttock entering to side of coccyx and leaving downwards to ischial tuberosity which was comminuted. Discharge copious and foul. X ray showed foreign body immediately in front of ischial tuberosity. Dec. 23th: Discharge continued copious and foul, wound opened up and drained. Foreign body not found. Jan. 3rd: Evidence of gas gangrene in thigh, further opening up of wound. Died next day.

*Post-mortem.*—Large ragged wound of right buttock, edges foul and gangrenous. Track leading inwards passing tip of great trochanter and reaching interior of pelvis below ischial tuberosity. Track terminated in large and exceedingly foul abscess between sacrum and rectum, did not communicate with latter.

2. Private M. G.S.W. thigh and buttock. Admitted May 4th, 1917. Died May 7th. Penetrating wound about centre of right buttock, very septic on admission. Patient's condition very poor. May 5th: Wound explored and found to penetrate ilium; no missile could be found; drainage-tubes inserted. May 7th: Gas gangrene developed in connexion with wound of thigh and patient died at 10 A.M.

*Post-mortem.*—Extensive gas gangrene. Fracture of middle of ala of ilium; tissues around foul, blackened, and sloughy. Small portion of metal found lying in substance of ilio-psoas muscle, extraperitoneal abscess at this point.

3. Private P. G.S.W. pelvis. Admitted April 30th, 1917. Died May 9th. Rifle bullet wound entering at symphysis, passing through bladder and rectum, and emerging at lower part of sacrum. Patient very ill on admission, exit wound foul and sloughy. Died of pneumonia.

*Post mortem.*—Fracture of symphysis pubis, perforation of bladder and rectum, fracture of lower part of sacrum. No peritonitis present; pelvic peritoneum blackened; small retroperitoneal abscess spreading up from exit wound between rectum and sacrum.

4. Lance-Corporal W. G.S.W. hip (left). Admitted August 9th, 1917. Died August 14th. Small penetrating wound in buttock posteriorly; wound foul and gangrenous and not draining well. Wound enlarged; Carrel-Dakin treatment instituted. Patient collapsed and died after second operation.

*Post-mortem.*—Fracture of great trochanter, comminution of neck and head of femur and of acetabulum. Missile, a rifle bullet, found in ilio-psoas muscle among fragments of bone on inner side of os innominatum. Muscles of thigh foul and blackened around upper part of femur; foul, black, and necrotic on both sides of pelvis. Abscess containing about 3oz of foul pus lying extraperitoneally and originating around rifle bullet and fragments of bone.

5. Private M. G.S.W. hip (left). Admitted Oct. 13th, 1917. Wound of buttock foul and septic; track led deep into gluteal muscles; no involvement of pelvis apparent. Wound opened up and drained. General condition of patient very bad; had some vomiting and evidence of extreme toxæmia. Died Oct. 17th.

*Post-mortem.*—Wound of buttock foul and necrotic; track led into retroperitoneal tissues by way of sciatic notch; whole of extraperitoneal cellular tissue involved in abscess formation. Peritoneum lining pelvis was congested; no peritonitis.

6. Drummer G. G S.W. thigh, sacrum, and rectum. Admitted Oct. 5th, 1917. Wound of perineum fracturing coccyx and penetrating rectum had entered abdominal cavity; constant oozing of fæcal matter from wound. Considerable bulging of lower part of abdomen. Laparotomy performed; large abscess arising from pelvis found, which was shut off from general abdominal cavity by adhesions. Abscess drained. Wound of perineum explored, fragments of bone removed; retroperitoneal abscess opened into, and this was washed out and drained. Did well for a few days, but developed pneumonia and died on Oct. 15th.

*Post-mortem.*—Pneumonic consolidation of bases of both lungs. In abdomen a large abscess cavity of pelvis and left iliac regions. Wound of perineum found to lead in upward and forward direction through rectum to enter abdominal cavity on left side. Abscess cavity between rectum and sacrum extending upwards for 4 inches.

7. Corporal F. G.S.W. back. Admitted Oct. 13th, 1917. Wound in mid-line over upper part of sacrum; no foreign body seen on X ray examination. Urine, later fæcal matter, issued from wound. Died Oct. 31st.

*Post-mortem.*—Wound through second sacral vertebra on right side, track led upwards and to left. On opening abdomen intestines found bound down by adhesions in pelvis. On separating these and further exploring very large extraperitoneal abscess of left side was found extending upwards beyond kidney and downwards into pelvis. Rupture (extraperitoneal) of rectum; no injury to ureter or bladder.

8. Private C. G.S.W. back. Admitted Dec. 1st, 1917. On admission small penetrating wound over sacrum in mid-line. X ray showed fragment of metal lying over right sacro-iliac synchondrosis. Dec. 5th: Wound enlarged and metal removed, fairly extensive bony damage present. Until 22nd wound continued to discharge pus freely; on latter date a patchy broncho-pneumonia developed at right base. Dec. 25th: Patient died from broncho-pneumonia.

*Post-mortem.*—Left lung marked congestion with recent pleuritic adhesions. Right lung, advanced purulent broncho-pneumonia with numerous small bronchiectatic cavities at base; recent pleuritic adhesions. On making section of pelvis abscess was found between sacrum and rectum filled with thick yellow pus. This abscess extended over to right side as far as sacro-iliac synchondrosis. No peritonitis; no involvement of spinal meninges.

# A NOTE ON ANAEROBES IN SOIL-INFECTED WOUNDS.

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IN the course of my work in this laboratory for Sir David Bruce's Tetanus Committee I have collected evidence from a large number of cases respecting anaerobes which seems to be worth recording.

## *Persistence of Anaerobes or Spores.*

The following cases are selected as evidence that the organisms or their spores do remain even deep in the tissues after healing has taken place.

CASE 1. *Gunshot wound of thigh and amputation.*—The discharge from this wound was first examined on April 10th, 1917, and found to contain organisms of type *B. perfringens* and *B. malignant œdema*. On June 21st original wound was healed, but because of deformity and a bad stump an amputation was done. Major A. Neve, operating surgeon, kindly kept a piece of bone from stump, avoiding all contamination as far as possible. This piece of bone I thoroughly grilled in a bunsen flame, then, with great care as to sterility, cut down and removed several pieces of tissue from surface of bone; these were placed in an anaerobic meat-tube and incubated. In 48 hours gas formed and the meat was pinkish, with foul smell. The microscope showed a bacillus of malignant œdema type, also a streptococcus of a distinctive type which had been present in the old wound. Subcultures were made on various media and tallied exactly with the organisms in original wound, but *B. perfringens*, though present in cultures from original wound, had now disappeared.

CASE 2. *Gunshot wound of thigh.*—First amputation April 20th, 1917; re-amputation July 4th. During April I had made cultures from discharge from wound and found a long, slender endosporing bacillus to be the dominant organism. At re-amputation (July 4th) complete healing had not taken place, there being a superficial area of 2 square inches of healthy granulation tissue, cultures from this gave staphylococci only, no anaerobes. A piece of bone from stump was treated as in Case 1; same technique. The anaerobic culture gave a long, slender endosporing bacillus, resembling in characters that found in original wound. This was a strikingly distinct organism of Von Hibler IX. type.

CASE 3.—Amputation of thigh (in France) April 2nd, 1917. Re-amputation (Dartford) June 25th. On April 20th cultures were made from wound discharge and growths procured of types *B. perfringens* and *B. malignant œdema*. On re-amputation (June 25th) wound was nearly healed, there being a few granulations from which cultures were made and showed staphylococci only. A piece of bone was taken from stump, and treated as in Case 1. The cultures gave as the dominant organism a spore-bearing anaerobe of malignant œdema type similar to that in original foul discharge.

Five other cases, making eight in all, of pieces of bone were cultured, where the original wound was healed or very small and clean and free from anaerobes. Six out of the eight gave anaerobes, one a streptococcus, and one was sterile.

In these cases I have thought it best to use the term "type of organism," for in the many found in a soil-infected wound, it is seldom that one will answer to all the characteristics which are associated with a specific name; thus an organism will sometimes be motile, at others non-motile, and the Gram staining varies continually. Again, it is very difficult to isolate an organism and obtain a pure culture, for though many disappear in the subcultures from the great crowd that are seen in a soil-infected wound it may be that those which drop out are the organisms one wishes to study. Even when one has what appears to be a pure culture it frequently happens that after some weeks, or months, another organism will crop up in the culture.

## *Carriage of Infection to Other Parts.*

The question of anaerobes being carried by the blood or lymphatics to distant parts of the body and there setting up inflammation and causing metastatic abscesses has been another point under consideration, and the evidence appears to be that this does take place. The following cases are illustrations:—

CASE 1. *Gunshot wound of thigh.*—Amputation on June 5th, 1917. An anaerobic meat culture was made from wound discharge, gas formed in 24 hours, and the most prominent organism was a slender Gram + rod: in subcultures this showed endospores, was non-motile, and inclined to Gram-negative. This bacillus resembled Von Hibler IX. There was also a plentiful growth of streptococci. A few days later this patient developed symptoms of meningitis and died on June 26th.

I made a P.M. examination of the brain. The skull-cap having been removed and every precaution taken to prevent contamination, I drew some fluid from central brain fissure and cultured it, using same technique as that employed in culturing discharge from wound. From these cultures I obtained the same type of anaerobic spore-bearer that grew in cultures from wound. This was morphologically and in its cultural aspects a very distinct organism, and the resemblance between that obtained from the wound and that from the meninges was very striking. No streptococci grew in cerebral fluid culture.

In two other cases of soil infected wounds the patients developed signs of general septicæmia and later lung symptoms. Both died and at the P.M. small multiple abscesses of the lungs were found. Cultures from these abscesses grew similar types of anaerobes to those which had been previously cultured from the patients' wounds.

A third case with a soil-infected wound died with symptoms of pleurisy. I cultured some fluid from the pleural cavity and again found the same type of anaerobes which cultures from the wound had shown.

## *Conclusions.*

Several other similar cases have passed through this laboratory, but it seems unnecessary to give more details as the above are sufficient to illustrate the conclusions at which I have been endeavouring to arrive.

1. That anaerobes or their spores persist in the deep tissues around bone and in scars after wounds have healed, or when they are covered with healthy granulations that give nothing but staphylococci on culture.

2. That anaerobes can find their way from an infected wound of the extremities to the serous cavities of the brain and pleura, and are found in these localities in connexion with meningitis and pleurisy.

3. That anaerobes are found in metastatic abscesses of the lung resembling in type the organisms found in the soil-infected wound of the patient, and the symptoms of these patients are those of general septicæmia.

I have not entered into any speculations as to the precise way by which anaerobes find their way from one part of the body to another; it appears certain that they produce a substance that paralyses the polymorphonucleur leucocytes and inhibits phagocytosis, this being one of the factors which accounts for the rapid progress of acute bacillary gangrene.

Again, I have not spoken of symbiosis, which is another important factor in dealing with anaerobes, but the whole subject is so big, and seeing the great mortality caused by these organisms so important, that I trust even the few observations I have made on the fringe of this great field for research will be of some value.

For permission to publish this note I am indebted to Lieutenant-Colonel Bond, Commandant.

WAR CASES AT PORTSMOUTH.—Application has been made from the Ministry of Pensions, through the Local War Pensions Committee, for temporary accommodation at the Royal Portsmouth Hospital for cases requiring orthopædic and general treatment until arrangements were completed for their reception at the Alexandra Hospital, Cosham. The committee have replied that 25 beds could be allocated for discharged sailors and soldiers for a period of 12 months at a payment of 6*s.* a day, with the proviso that while such patients would be given priority, the beds would not be kept vacant for them. The payment for such cases treated as out-patients would be 1*s.* for each visit.

# Clinical Notes:
## MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

### A CASE OF AMŒBIC ABSCESS OF THE LIVER AND BRAIN WITH NO PREVIOUS HISTORY OF DYSENTERY.

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THE chief points of interest in the following case are the absence of a history of any previous illness of a dysenteric nature and the difficulty of ascertaining the occasion of the primary infection. One can only surmise that the infection occurred from contact with a carrier. In the *Presse Médicale* of August 6th MM. A. Fuchs and A. Bouchet quote four similar cases of amœbic liver abscess, in none of which was there any history of a previous attack of dysentery or even of diarrhœa. These cases all occurred in one limited area and were considered by the authors of the article to be due to infection from a carrier.

Corporal W. B., aged 35, was admitted on July 11th, 1917, from France, diagnosed "gallstones," with notes to the effect that he had had, since admission to hospital in France, an evening rise of temperature to 103° F. with frequent rigors, jaundice, and pain in the region of the gall-bladder. The following information was gathered as regards the patient's history.

He had arrived in England towards the end of February, 1917, having during the voyage from New Zealand spent a day ashore at Albany and several days at Cape Town. He had never previously been out of New Zealand. While in camp in England, in April, he had an attack of what he thought was influenza, with pain in his right side, "just under the ribs," and in his right shoulder. He thought he had one or two shivering attacks at this time. He recovered and was sent to France, apparently well, on May 27th. From the time he reached France to the date he was admitted to hospital, June 15th, he had several attacks of shivering at night, and these rigors continued with greater frequency after he was admitted to hospital. He stated that he had never had an attack of dysentery, had never suffered with diarrhœa, and had never noticed anything abnormal with his motions.

In this hospital the patient had a nightly rise of temperature to 102–103°, with rigors at intervals of two or three days. He complained of pain on the right side on taking a deep breath and of a constant sense of fullness and discomfort on the right side. He was sallow but not definitely jaundiced. On palpation there was marked tenderness in the region of the gall-bladder, and there was also tenderness in the right infra-axillary region. There was slight bulging of the lower ribs on the right side, and in this region there was some œdema of the skin, noted by the difficulty in pinching up the skin as compared with the same area on the opposite side. There was an extension upwards of the liver dullness on the right side, in front, in the axilla, and behind. Breath sounds at the right base were faint, there was diminished vocal resonance, and tactile fremitus was absent. A few crepitations could be heard at both bases. Urine normal. Fæces negative to bacteriological examination. Blood, three days' culture, negative. Blood count showed a leucocytosis of 18,000. No eosinophilia. X ray examination: Diaphragm was higher on right side but moved freely with respiration; liver shadow showed indefinite increase of density on right side. The condition was diagnosed as one of hepatic abscess of uncertain nature, and the patient was operated upon.

The abdomen was opened, the liver found to be enlarged, with some weak recent adhesions over the upper part of the right lobe, and in this region the liver felt softer and less resistant than elsewhere. A needle was then inserted between the ninth and tenth ribs in the mid-axillary line towards the portion of the liver where the adhesions were felt, the hand guiding from inside the abdomen. Thick pus was drawn off almost immediately on the needle penetrating the liver. The abdominal incision was then sewn up, and an incision made over the ninth rib in the axillary line. Three inches of rib were removed, the two layers of pleura sewn together over an area of about 2 × 1 inches, and the incision carried through the layers in the enclosed area, through the diaphragm, and through about 3/4 inch of liver substance into the abscess. The abscess filled the greater part of the right lobe, and was about 4 inches in depth, 5 inches from side to side, and 4 inches from above downwards. The contents of the abscess consisted of thick pus, partly brownish red, but mostly light yellow in colour. There were no cysts in, or lining membrane to, the cavity. The pus was evacuated and a large tube inserted for drainage.

Pus obtained at the time of operation was examined bacteriologically with a negative result. Cultures were sterile. A specimen of pus from the discharge three days later was found to contain motile *Entamœba histolytica*. The entamœba or cysts have been found in every subsequent examination. There has been no bacterial growth from the pus.

The operation gave immediate relief from the pain and discomfort previously present, but apart from the local improvement and the disappearance of the rigors there has not been a marked change in the patient's condition. The discharge became scanty and the cavity shrank to about the size of a golf ball. The liver dullness became less than normal.

Emetine hydrochloride was given hypodermically, 1 gr. per diem, for 14 days with no apparent influence either on the temperature or on the presence of the entamœbæ.

We have to thank Lieutenant-Colonel D. S. Wylie, C.M.G., F.R.C.S., O.C. No. 1 N.Z. General Hospital, for permission to publish this case.

*Addendum.*—The patient died on Sept. 22nd. For a fortnight prior to his death he had a temperature of 101° with few remissions and had no rigors. He had steadily become weaker and very dull mentally till during the last few days he became almost semi-comatose, with some incontinence of urine and fæces. Otherwise there were no special symptoms observed.

*Post-mortem.*—The abscess in the liver had shrunk markedly and was no larger than a golf ball, and around the abscess were some scarring and macroscopic degenerative changes. The condition was obviously rapidly recovering. There were adhesions of liver to peritoneum around the sinus and adhesions of pleura at site of suture. There was no abnormality of intestines, except some slight congestion of the mucous membrane of the cæcum. Some hypostatic pneumonic condition was seen at base of both lungs, especially the right. In the brain an abscess of size of pigeon's egg was present in lower inner portion of right frontal lobe extending into right ventricle and containing thin yellow pus. There was an area of softening in the brain around and localised basal meningitis in that area. The pus contained motile *Entamœba histolytica*. Death was obviously due to the secondary abscess in the brain.

### A CASE ILLUSTRATING AN EXTREME MODIFICATION OF LOCAL TETANUS.

BY CECIL WORSTER-DROUGHT, M.B.CANTAB., &C.,
TEMPORARY CAPTAIN, R.A.M.C.; NEUROLOGIST, ROYAL HERBERT HOSPITAL; AND TETANUS INSPECTOR, WOOLWICH DISTRICT.

CASES such as the present frequently pass unrecognised as local tetanus, no doubt partly owing to the fact that the patient may not complain of the condition, assuming that any symptoms he may experience are merely the result of the presence of the wound. Even when the recognised prophylactic treatment has been carried out, such conditions are not altogether rare; they probably represent tetanus in almost its extreme modification. These cases should be watched for and reported as local tetanus, as one is justified in assuming that if the course of prophylactic injections of antitetanic serum had been less complete, more severe tetanus would have resulted.

S. E. was wounded by shrapnel through right thigh on Nov. 12th, 1917. Later in same day, according to field medical card, wounds excised; 750 units of antitetanic (A.T.) serum. On Nov. 25th wounds were stitched up at base hospital. Three further prophylactic injections of A.T. serum (500 units each) were given at weekly intervals. A short time after last injection (on Dec. 3rd) the patient began to experience occasional "twitches" in injured thigh; for some days, he stated afterwards, limb had felt somewhat stiff.

On Dec. 7th he was evacuated from France to England. The condition, however, passed unrecognised, and no doubt, owing to inability to flex leg at knee, the case was regarded as one of possible injury to sciatic nerve. To determine such a condition he came under our observation on Jan. 3rd, 1918.

The history then obtained, in addition to above, was as follows: From time to time the leg would give spontaneous "jerks"; these were very infrequent (four or five in day). Occasionally such a twitch if anybody came near him. Beyond this, only sleeplessness and occasional pain in region of wound; no restlessness, hesitancy of micturition, dysphagia, &c.

Physical signs were as follows:—

Anterior wound in mid-line of thigh, 5 inches below Poupart's ligament; practically healed. Posterior wound just above right gluteal fold, about 1½ inches from natal cleft; had healed eight days previously. Below anterior wound there was well-marked rigidity of quadriceps extensor muscle, chiefly involving rectus femoris, and extending downwards for about 5 inches; above wound rigidity extended upwards for about 1½ inches. On account of this rigidity patient was quite unable to flex leg at knee. In posterior part of thigh a moderate-sized mass of "wandering" œdema was present, which on palpation somewhat obscured condition of hamstring muscles. All other muscles, however, appeared moderately flaccid, although patient experienced considerable difficulty in moving foot. Knee-jerk not elicited; patellar clonus absent; tendo Achillis jerk brisk, equal with that on left side, no ankle clonus. Plantar reflexes flexor. No evidence of injury to sciatic nerve; all sensation normal; all muscles normal to electrical stimulation.

Treatment and progress continued as follows :—

Jan. 3rd: 1500 units A.T. serum intramuscularly; 5th: 500 units subcutaneously. 7th: Able to move foot freely and flex knee to very slight extent. All local spasms had ceased; leg caused no pain. Muscular rigidity as before. 8th: 500 units A.T. serum subcutaneously. 13th: He complained of sleeplessness and occasional slight twitching at knee, not brought on by any particular action.

Jan. 14th: 500 units A.T. serum subcutaneously, and repeated daily up to 17th. 20th: Rigidity of quadriceps considerably less; spasms had again disappeared. Patient able slightly to flex leg at knee. 26th: Quadriceps muscle appeared quite supple. He was beginning to flex leg well; no voluntary movement possible as regards extension at knee. This was not due to injury of anterior crural nerve, as all muscles supplied by this nerve responded normally to faradism and to condenser discharges. The "wandering" œdema had practically disappeared.

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

*Industrial Tuberculosis.*

A MEETING of this section was held on May 24th, Dr. G. S. BUCHANAN, the President, being in the chair, when Dr. E. L. COLLIS Director of Welfare and Health, Ministry of Munitions, opened a discussion on the Incidence of Industrial Tuberculosis.

Dr. COLLIS said that, limiting the subject to pulmonary tuberculosis and to the occurrence of the disease among those aged 15 years and upwards, the conditions which were generally agreed to have an influence in promoting the development of tuberculosis, and which were more or less intimately associated with industrial environment, were :—

1. *Overcrowding*—the aggregation in such close proximity as might allow of spray infection due to coughing, of persons among whom tuberculosis was not more than normally prevalent.
2. *Presence of an unusual number of cases* in an otherwise normal environment, often associated with, and following upon, overcrowding.
3. *Alcoholism*, due to "industrial drinking," either established by the custom of the trade or conduced to by conditions of heat or dust.
4. *Illness*, by which was meant lowered general resistance brought about through fatigue, the result of long hours, imperfect ventilation, bad feeding, lack of rest and healthy recreation.
5. *Inhalation of injurious dust*, such as the dust of silica; he did not consider the inhalation of silica dust the main predisposing cause, in industry, of tuberculosis.

A table was then shown giving the comparative mortality for some important causes of death for four typical groups of males. The first group, that of occupied and retired males, was taken as the standard. The second (shoemaker) was chosen as an example of an industry wherein, except for the possibility of infection, no adverse influences were more prevalent than in other industries in which tuberculosis was less prevalent. In this group figures showed that the mortality from tuberculosis was the only one calling for serious comment. The third group included publicans and inn-servants, and represented the peculiar influence of alcohol, which lowered the general resistance of the body and caused an excessive mortality from every cause. In this group the mortality from phthisis was more marked than in Group 2. The fourth group included tin-miners and showed the effect of silica dust, which exerted its influence upon the incidence of tuberculosis by damaging the lung tissue. In this group the mortality from phthisis and other lung diseases was in each case over four times that in the standard group. Another table was then shown which gave the incidence of tuberculosis mortality at different age periods. The curve for the shoemaker was so close to that adopted as the standard as to suggest that the predominating influence determining it was the same as that determining the curve for "occupied and retired males." The curves for the publican and the tin-miner differed entirely from that of the standard, suggesting that different determining influences were at work. In investigations into industrial mortality the death-rate per 1000 living was particularly difficult to obtain. This had induced Dr. Collis to use the method of "proportionate mortality" for investigating occupational mortality data, and particularly data due to tuberculosis. This method consisted in examining the causes of death of a sufficient number of persons whose exact occupation was known without considering the number among whom these deaths occurred. If such deaths were classified according to age-period the percentage of all deaths due to any special disease, such as tuberculosis, at each age-period could be stated. He had carefully compared death-rates for tuberculosis and also for other diseases at certain age-periods for certain groups for which both the mortality per 1000 living and the percentage of all deaths were known, and had shown that when the death-rate per 1000 living exceeded the standard the percentage of all deaths as a rule exceeded the standard. Tuberculosis, after its inception, often led to a change of occupation, and this tended to obscure the issue. For this reason we required information as to the occupation when invalidity commenced. In 1853 Finlaison, actuary of the National Debt, when reporting to the Registrar of Friendly Societies, said that "the real practical difference in the distribution of sickness seemed to turn upon the amount of the expenditure of physical force .....: the quantum of sickness annually falling to the lot of man was in direct proportion to the demands on his muscular power." Fifty years later Watson, whose actuarial investigation of the records of the Manchester Unity, Independent Order of Oddfellows was used as the basis of the National Insurance Act, said that "the proportion of members sick during any year varied with the occupation," and he concluded that "the element of occupation was of greater importance in determining the contribution for a sickness benefit than that of locality." If morbidity were carefully investigated the effect of occupation would be obvious.

Captain MAJOR GREENWOOD, R.A.M.C., said that as the result of statistical investigations he was led to think that industrial reorganisation was the principal factor in the recent increase of mortality from tubercular diseases among women in this country. Speaking of the general question of industrial tuberculosis, he said that the criticism was that those occupations subject to a high tuberculosis-rate were (excluding the silica trades) precisely the industries which made little demands upon physique, and could therefore be pursued by those whose bodily development was below the average, and who consequently were presumably less resistant to the ordinary dangers of infection from which no industrial worker was immune. He thought that certain statistical researches which he summarised provided tolerably distinct evidence that the excessive mortality from tuberculosis in certain occupations not subject to specific risks, such as those involving contact with silicious particles, was not explicable by an appeal to industrial selection.

Dr. BENJAMIN MOORE, referring to Dr. Collis's paper, said that alcohol predisposed to disease in all forms, but it must also be remembered that phthisis predisposed to alcoholism. Barmen and inn-servants were casual occupations, and often badly paid, and could easily be taken up by those beginning to ail from commencing illness. The specific influence of silica was due to the properties mentioned in his paper. It was heavy, and had to be coughed up against gravity, or moved upwards by the cilia. Owing to its sharpness the particles stuck in the lung. Particles of iron did not cut; the incidence of phthisis among ironstone miners was therefore less than among silica workers. In the past 30 years the number of deaths from phthisis among printers was halved compared to deaths from other diseases. Death was not due to the occupation but to surroundings and the conditions under which they did their work. With the silica worker we must remove the predisposing cause (the silica); with the printer we must remove the direct cause—we must remove the infected worker from the shop. Dr. Moore then gave a classification of all the occupations dealt with in the reports of the Registrar-General, arranging these in the descending order of magnitude of the severity of the incidence of pulmonary tuberculosis. This list illustrated the great variation in the incidence of phthisis arising from occupation, and showed the paramount importance of environmental conditions. Thus, the severity varied over tenfold, from 3·73 times the normal in tin-mines to only 0·37 of the normal amongst clergymen; there were many manual trades with nearly double the normal incidence, and others with an incidence little more than half the normal. Some of the latter were dusty occupations, indicating that certain dusts were not harmful. These variations were discussed and shown to be due to several operating causes, such as the injurious nature for the lungs of substances handled, casual conditions of work and payment, varying degree of individual infection

at the work, the nature of the work, and of surroundings whilst at work. The general list of classification gave certain interesting juxtapositions of employments, such as that commercial clerks were no more heavily hit by consumption than were open-air transport-workers, the incidence figure for both only lay 8 per cent. above the average for the whole country; that the whole class of factory operatives, spinning and weaving cotton indoors, who were popularly believed to be riddled by consumption, possessed an incidence figure lying only 3 per cent. above the average, and practically at the same level as over one million males living outdoor lives in all the building trades; the large class of the coal-miners, on the other hand, possessed only half the normal incidence and ranked on terms of equality with all agriculturists. Again, farm labourers, who were commonly believed to suffer much from consumption and were poorly housed, were as healthy so far as this disease was concerned as their masters, the farmers, the farmers' sons, and graziers, each class showing only half the normal mortality. The general table of classification was then split up into groups of occupations with common conditions or handling the same or similar materials, when certain of these groups were found to show a great preponderance of occupations with an incidence higher than normal, whilst others just as clearly showed a preponderance with incidences lying below normal level. The following groups showed an enhanced incidence: (*a*) Casual and badly paid occupations; (*b*) occupations handling the heavy metals (tin, copper, lead, zinc) or their compounds; (*c*) occupations handling hard silica (flint, quartz, ganister) or glass; (*d*) occupations handling skin products and their derivatives—viz., hair, felt, leather, wool; (*e*) occupations exposed to cellulose dusts in various forms, such as wood, paper, and cotton. The healthy occupational groups were (*f*) all occupations handling foods; (*g*) occupations handling coal, clay, ironstone, iron, and steel; (*h*) agricultural occupations; (*i*) certain sedentary occupations or those entailing light manual labour. Among those engaged in certain occupations, such as miners, in heavy metals, and silica workers other types of respiratory diseases rose *pari passu* with phthisis, demonstrating that the primary cause was a chronic inflammatory irritation by the material worked upon. Among those engaged in other classes of occupations heavily hit by the disease, such as printers and shoemakers, phthisis alone of the respiratory diseases mounted high above normal, showing that the responsible factors were probably an abnormal degree of infection in the workshop and predisposing general conditions in the occupation. It was pointed out that free silica owed its pre-eminently evil properties as a pre-disposant to phthisis not to any chemical characters, but to three important physical properties—viz.: (1) its heaviness, (2) its sharp vitreous fracture, (3) its great hardness and insolubility. A study of phthisis in the allied printing trades was made from the obituary lists of all the trades unions over many years and the conditions of labour and predisposing factors were discussed. The statistics showed that a steady improvement had been going on in the printing trade which was especially marked between 1900 and 1914 (when the outbreak of the war disarranged all statistics). Another interesting point was that all types of printing labour suffered as well as compositors, and some even more severely. Improved conditions of labour and, more particularly, reduction of hours and regularisation of times of work had contributed largely to this beneficial result. Conditions conducive to infection amongst printers were considered and remedies were suggested.

Dr. JOHN BROWNLEE showed charts comparing the curves of mortality from phthisis (*a*) among the tin-miners in Cornwall and among the inhabitants of the same district; and (*b*) among the slate-quarrymen of North Wales and those living in the neighbourhood of the quarries. In each case the incidence of phthisis was most marked among the industrial workers at the same age as that at which it was most prevalent in the district. From this Dr. Brownlee concluded that the industrial workers contracted the same form of phthisis as did the non-industrial inhabitants of the same district. He thought there were three different forms of the disease—that which attacked (*a*) the young; (*b*) the middle-aged; and (*c*) those late in life. The problem was not that of one disease but that of a group of diseases.

## SECTION OF ANÆSTHETICS.

### *Some Considerations on the Physiology of Anæsthesia by Chloroform.*

A MEETING of this section was held on May 7th, Dr. J. BLOMFIELD, Vice-President, in the chair. Sympathetic reference was made to the recent lamented death of Mr. George Rowell, F.R.C.S., the President.

Dr. G. A. BUCKMASTER read a paper entitled "Some Considerations on the Physiology of Anæsthesia by Chloroform." Experiments were described that had been carried out with Dr. J. A. Gardner for ascertaining anæsthetic and lethal quantities of chloroform in the blood of animals narcotised and killed, the part played by the red corpuscles in the transport of the drug, and the rates of assumption and elimination of chloroform. It was found that as much as 94 per cent. of the drug may be carried by the red corpuscles in the cell-proteins of which it is probably absorbed. In experimental anæsthetisation with known percentages of chloroform a primary and secondary danger-point were recognised. When the first is passed the average chloroform-content of arterial blood is about 27 mg. per 1000 g. of blood at disappearance of reflexes in the case of cats, and 31 mg. in the case of dogs. During anæsthesia the quantity slowly and steadily increases. Respiration ceases in cats with about 40 mg., and in dogs with 61–69 mg. The body weight, without fat, appears to be without influence on the percentage of chloroform in the blood necessary to produce anæsthesia. It is the percentage value of chloroform in the blood that is important, for this remained constant during complete anæsthesia in animals with (1) normal quantity of blood, (2) diminution through hæmorrhage, (3) augmentation through transfusion, though the total quantity of chloroform rose and fell with the corpuscular richness and poverty of the blood. This percentage value must stand in relation to the solution-pressure in virtue of which the drug enters the cells of the organism. A chart was shown illustrating the rate of assumption of chloroform by the blood during anæsthesia and the rate of elimination afterwards. Chloroform is neither decomposed nor oxidised within the body. It was shown that in the work of Nicloux the carbon monoxide actually found was produced during the analysis of the blood gases. The blood yields carbon monoxide during blood-gas analysis over potash. Ventilation of the lung during chloroform narcosis can be ascertained only by plethysmographic methods with an apparatus similar to that used by Haldane and Boycott. During the first three minutes the lung ventilation is diminished by 50–60 per cent. of its original value. From this some recovery occurs, but prolonged anæsthesia always diminishes the lung ventilation by a similar amount—60 per cent. of the original value. Tables were shown giving comparisons of the total blood gases under chloroform and ether. The former drug markedly affects the gas content of the blood, the latter scarcely at all. The diminution in oxygen content of the blood in chloroform narcosis is not due to the diminished lung ventilation but probably to the direct action of the drug on the red corpuscles. During complete anæsthesia the fall in oxygen is 40 per cent. The hæmoglobin is therefore only partially saturated with oxygen during chloroform narcosis. The hæmoglobin is, in fact, in the same state of partial saturation with oxygen that it would be with an oxygen-tension to the alveolar air of only 45·5 mm. Hg, whereas the normal tension is 99·49.

A discussion followed in which Dr. A. G. LEVY, Professor A. D. WALLER, Mr. P. L. MUMMERY, and others took part.

Mr. O. MILLAURO demonstrated an improved Foot Key with rubber surface for use with "gas" cylinders, and Captain C. HIRSCH and Captain H. E. G. BOYLE showed apparatus for continuous administration of gas and oxygen and ether.

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DONATIONS AND BEQUESTS.—The Royal Dental Hospital, Leicester-square, and the West London Hospital, Hammersmith, have each received a donation of £500, and the Italian Hospital a donation of £100, from the trustees of Smith's (Kensington Estate) Charity.—Colonel Sir H. Webb, M.P., has given £1000 to the Dilke Memorial Hospital, Forest of Dean, Gloucestershire.—Dr. E. A. Letts, late Professor of Chemistry in Queen's University, Belfast, has, by his will, left (subject to his wife's life interest therein) the sum of £2100 for the purpose of the foundation of a scholarship in connexion with the University.

# Reviews and Notices of Books.

*Aids to Rational Therapeutics.* By RALPH WINNINGTON LEFTWICH, M.D., C.M. London: Baillière, Tindall, and Cox. 1918. Pp. 233. Price 3*s.* 6*d.*

IN his Bradshaw lecture last autumn Professor E. S. Reynolds suggested a re-grouping of diseases under the factors of their causation, tentatively naming ten such headings: injury, food and feeding, poisons, occupation, stress, abnormal metabolism, abnormal age changes, neoplasms, parasites, and heredity; and we agreed that such a re-grouping, if practicable, was likely to lead to progress on right and hopeful lines. In the book before us Dr. Leftwich has also discarded for the purpose of teaching therapeutics the grouping of diseases according to the organ affected, and has brought together in the same chapter diseases requiring the same treatment, a grouping which coincides closely with diseases of allied pathology. He distinguishes 40 groups, giving the treatment common to the whole group, supplemented by that which is special to each member. He considers that on this plan the student is enabled to acquire his knowledge of therapeutics in one-twentieth of the usual time. Some of the groups, selected at random, are: the hyperæmic group, the calcium insufficience group, the low-tension group, the tonic spasm group; and 32 pages suffice to cover the 56 ungrouped diseases which remain outside. The result is a book which student and practitioner alike will find stimulating and thought-compelling: no mere condensation of a detailed system of treatment, but a valuable introduction to rational study of the subject. We sympathise with the author in his desire to see founded a chair of coördinated medicine, for which ten years' general practice would be an indispensable condition. His autobiographical study at the end of the volume is piquant.

*Surgery and Diseases of the Mouth and Jaws: A Practical Treatise on the Surgery and Diseases of the Mouth and Allied Structures.* By V. P. BLAIR. Third edition. With 466 illustrations. London: Henry Kimpton. 1917. Pp. 733. Price 30*s.* net.

THE fact that the first edition of this work only appeared in 1912 and that the third is now before us is sufficient testimony of its value to those seeking information with regard to the surgery of the mouth and jaws. But while in general the information given is sufficient and exact, we must confess after reading the portion of the book dealing with gunshot injuries of the jaws and face to a feeling of disappointment that these subjects have not been dealt with more fully. There is a good account of the various splints used for fixation of the jaws, but little information is given regarding the surgical aspect of treatment. While, too, the general principles of bone-grafting in the mandible are described, the author's reticence is regrettable in withholding full details of the results obtained for comparison with the value of other methods. For the rest, the remaining sections of the book are of high merit, and we regard it as one of the most reliable manuals on the subject.

*Scientific Treatise on Smoke Abatement.* By H. HAMILTON, A.R San.I., A.M.I.Mech.E. Manchester: Sherratt and Hughes. 1917. Pp. 155. Price 5*s.* net.

THE author approaches the subject of smoke abatement chiefly from the engineering point of view in connexion with the great furnaces of our industrial factories. He has produced a very interesting account of the practical attempts so far made to prevent the production of smoke, and the book should do good service in drawing attention to the great improvements which are feasible not only in regard to preventing smoke formation but in regard also to economising fuel. Further, he has reproduced reports of the Coal Smoke Abatement Society from our columns giving the numerous smoke tests made on various types of domestic fire-grates. Reference might also have been made, we think, to the work of the Atmospheric Pollution Committee under the direction of the Meteorological Office, since this work demonstrates the need for reform in the methods of burning coal both at home and in the great industrial works. The merit of the volume lies in its account of the progress which engineers and constructors are achieving in smoke abatement.

*Foods and their Adulteration.* By HARVEY W. WILEY, M.D., Ph.D. Third edition. London: J. and A. Churchill. 1917. Pp. 646. Price 24*s.*

IT is natural that Dr. Wiley's text-book should have had a large and continuous sale. The subject, as presented by a medical man who was for long official chemist to the U.S.A. Government, has special attractions for the medical reader, and the author writes from a many-sided experience which has resulted in a marked breadth of view. He has none of the exclusiveness of the extreme technician and goes so far, indeed, as to suggest the undertaking of tests for adulteration by those without special training in such methods. In this new edition he has incorporated certain of the new principles discovered in the use of foodstuffs, while reserving for a later issue the complete re-writing of the subject-matter which he foresees these discoveries will ultimately necessitate. The sections on the drying of milk, the digestibility of various kinds of bread, and the value of a knowledge of vitamine-content, indicate that he has kept abreast of the pressing needs of the time. The book in its new form will be very useful to the student of the problems of nutrition.

*The Chemical Constitution of the Proteins.* By R. H. A. PLIMMER, D.Sc. In three parts. Part I., Analysis. With diagrams. Third edition. London: Longmans, Green, and Co. 1917. Pp. 174. Price 6*s.* net.

THE first part now appearing of this monograph serves to show how far modern analytical methods have gone up to the present time in elucidating the composition of the proteins, but, as Dr. Plimmer points out, some of the methods have been adapted too exclusively to the solution of one particular part of the whole protein molecule, and what is wanted is a coördination of methods which should bring about a better knowledge of the whole. Still, much progress has been made as a result of the new methods which have been introduced, and the solution of the problem will be brought nearer as these methods are studied and extended. The copious analytical data compiled in this volume afford conclusive proof of this. The chapters for the most part deal with the isolation and estimation of the groups, the mono-amino acids, and the di-amino acids, and much new matter has been added embodying the work of bio-chemists from most of the great teaching centres of the world. We consider the book to be a valuable addition to the series of monographs on bio-chemistry.

*A Text-book of First Aid and Emergency Treatment.* By A. C. BURNHAM, M.D., Medical Corps, U.S.R., Instructor in Surgery in the Polyclinic Hospital, New York City. Illustrated. Philadelphia and New York: Lea and Febiger. 1917. Pp. 307. Price $2.

Dr. Burnham's book differs in several ways from the first aid text books with which we are acquainted in this country. In the first place the scope is wider than in the British books, a fact indicated by the words Emergency Treatment in the title; moreover, the book is intended to be used for both field *and* hospital work—a totally different purpose from British work of the kind. We look in vain for many points usually dealt with in "first aid" text-books. Thus, there is no word of "pressure points" where arterial hæmorrhage can be arrested; digital compression, the first-aider's real standby, is scarcely mentioned except as done by a surgeon at the operating table; Esmarch's triangular bandage, in universal use, is not made much of, whereas the roller bandage is fully dealt with. On the other hand, the diagrams in the book are excellent, taken as they are for the most part from standard works on anatomy. In addition to these topics Dr. Burnham's book includes nursing as well as subjects dealt with in books on so-called family or domestic medicine. It is printed in excellent type and on good paper; the text reads smoothly and the information conveyed will prove a useful and reliable guide to be placed in the hands of nurses and orderlies taking up military work in hospitals at home or at the front.

HOSPITAL SUNDAY FUND AT BRISTOL.—The final distribution of this Fund was made last week. £3832 have been allocated amongst the medical charities in 1918. This is the highest sum collected. In 1917 the amount divided was £3159, which was the previous largest contribution.

# THE LANCET.

*LONDON: SATURDAY, JUNE 1, 1918.*


## Transfusion of Blood in Military and Civil Practice.

THE idea of transferring blood from the healthy to the sick has appealed to the profession from the earliest days; it was practised in the fifteenth century, and coming to the comparatively modern date of 1826 the *Sunday Times* thus hopefully and romantically presented the subject of transfusion to the public in this country:

"The late discovery of the beneficial effect of transfusion of blood opens a wide field for improvement in medical practice. It is said to be in contemplation to establish a Transfusion Hospital, with a proper supply of good young country subjects, chiefly feminine, for inoculating the aged and decayed with the genuine *pabulum vitæ*."

But nearly a century elapsed after the introduction of transfusion as a scientific practice before any important progress in technique was made, and then, although awakening had already begun, it was the war which thrust the importance of transfusion upon us. G. W. CRILE had given the subject a new and lasting impulse in America when he published his important work on "Hæmorrhage and Transfusion" in 1909, and a number of his fellow countrymen had quickly followed his lead. MOREL and others had taken up the work in France, and accounts of small transfusions had begun to appear in German journals. A. E. STANSFELD and O. F. F. LEYTON had both begun to study the subject in this country from the point of view of the physician, but we doubt whether any English surgeon could have been found to perform the operation of blood transfusion even so recently as four years ago. During the past two years, however, a number of reports by British writers have appeared, and already the lives of hundreds of our soldiers have been saved by the operation and by the readiness of their comrades to give the needed blood. Major L. BRUCE ROBERTSON'S article, which will be found in our columns this week, details, from the author's experience with the Canadian Army Medical Corps, some of the methods of transfusion which have been employed in the armies at the front, giving the types of case to which they have been applied. Direct transfusion from vein to vein or from artery to vein has not found general acceptance, and military surgeons seem, on the whole, to favour the use of a modified Kimpton tube, but it may be doubted whether this will prove as generally useful in civil practice as the citrate method.

The large number of transfusions to be performed and the readiness with which donors may be secured have greatly facilitated the work in the Army; but it is otherwise in civil practice, where the operation is much less frequently demanded and there is a greater reluctance on the part of relatives and friends to give blood. The scarcity of suitable donors will undoubtedly diminish with the termination of the war, but it must remain unjustifiable, except in the gravest emergencies, to take in civil life the risks which are inevitable in the casualty clearing station. Major ROBERTSON reports transfusion of 68 patients with 3 deaths attributed to hæmolysis of the transfused blood. Preliminary tests were impossible owing to war conditions, but the exigencies of ordinary practice seldom necessitate the use of untested donors and our present imperfect methods of testing are bound to rule out as unsafe the employment of many persons whose blood would not in actual practice constitute a source of danger to the patient. The test *in vitro* does not exactly forecast the reaction *in vivo*, and this greatly reduces the number of persons who may safely be chosen for use in any particular case. In other respects, too, the return to peace conditions will modify the problems of transfusion. Sudden and profuse loss of blood is the clearest possible indication for transfusion and the commonest condition demanding it at the present time, but in the future we shall have to direct more attention to the anæmias in general and to certain toxæmias in which there is reason to hope for benefit from transfusion.

With the civilian aspect of the matter Captain B. M. BERNHEIM, of the Johns Hopkins Hospital, deals at length in a recently published volume. The work has no special reference to war injuries but summarises the advances in transfusion made in America during the past ten years. BERNHEIM sums up in favour of the citrate method of transfusion, and his experience, together with that of WEIL, LEWISOHN, and others who have used sodium citrate in large numbers of cases, does not support the contention that citrated blood is less beneficial than so-called whole blood. LINDEMAN still holds out for the syringe method without the use of an anti-coagulant, but the exact mode of transference of the blood is, at any rate, comparatively unimportant, whereas the selection of the blood to be transferred and the determination of dosage are both matters requiring careful investigation. BERNHEIM rightly insists upon these points and questions whether frequently repeated small doses of blood may not be preferable in chronic anæmias to occasional massive transfusions. We may also ask whether the tests for iso-agglutinins and iso-hæmolysins are all that are required to determine the suitability of the donor's blood. If they are to be relied upon they should be carried out with all the care originally exercised by MOSS, for methods such as that of BREM, involving the use of stock sera for comparison, may allow trivial incompatibility *in vitro* to be overlooked and a wholly disproportionate degree of hæmolysis may result from transfusion. In some cases alarming reactive phenomena without evidence of hæmolysis have followed transfusion of "compatible" bloods, and in one reported case, in which transfusion of an incompatible blood was followed by immediate hæmolysis, the patient subsequently showed a remarkable improvement. A previous transfusion had produced neither constitutional disturbance nor hæmolysis,

and had been followed by no beneficial results. It is certain that in some chronic anæmias the value of transfusion is dependent upon an hæmopoietic effect of the transfused blood, and it may yet be found that blood the cells of which are rapidly destroyed is more efficient for this purpose, if given in suitable doses, than blood which survives for some days in the circulation of the patient. Moreover, the respective parts played by corpuscles and plasma have yet to be determined. Investigation of these various phenomena should not present insuperable difficulties, and we may hope that the rationale of transfusion will soon be placed upon a sounder experimental basis.

## The Retirement of Sir Arthur Sloggett: Appointment of Lieutenant-General Burtchaell.

Sir ARTHUR SLOGGETT, who has filled for three and a half strenuous years the position of Director-General of Medical Services on the Western front, has retired on reaching the age-limit for service on the Active List, and the good wishes of the thousands of medical officers who have served under him go with him into retirement. His elasticity of mind, receptiveness in respect of new ideas, and acumen in seizing on their essential points, his frank recognition that his own knowledge on many subjects could not be equal to that of the various experts, his lack of fussiness, and his sense of fairness were the qualities that commanded for him the respect of his colleagues in all ranks.

His successor, Lieutenant-General C. H. BURTCHAELL, has had an unrivalled experience of Army medical administration at home and abroad, with the Indian N.W. Frontier campaign of 1897, and as staff officer to Lord METHUEN'S division of the South African Field Force. In 1907 he was appointed headquarters staff officer of the Irish Command, until his transference to the War Office as Assistant Director-General in June, 1910. Since October, 1914, he has been in France, and closely associated in the development of the reorganisations required to meet the changing needs of a growing Army. To his intimate knowledge of the life and requirements of the British soldier General BURTCHAELL has added during the last two years a close association with the Overseas Forces which will stand him in good stead and act as a firm bond between the medical services. It is of particular advantage to know that the appointment of General BURTCHAELL is gratifying to the Overseas Forces; the Canadians especially welcome his appointment, for he came into close association with their forces at the second battle of Ypres, since when the bond of sympathy has continued to strengthen. General BURTCHAELL assumes his vast responsibilities at a critical juncture indeed, but his familiarity with the problems of military life, as they must affect professional organisation and efficiency, will enable him to act with the directness that makes for success.

# Annotations.

"Ne quid nimis."

## TRENCH FEVER INFECTION.

WE briefly alluded last week to the important discussion on trench fever at the Society of Tropical Medicine on May 17th. The investigation, which has been carried out at the Hampstead Military Hospital on behalf of the War Office Trench Fever Committee, not only throws new light on the mechanism of infection in trench fever, but is itself an important chapter in the epidemiology of parasite-borne disease. The work, which has been made possible by willing volunteers, has been carried out by Major W. Byam, R.A.M.C., and his coadjutors, Captain J. H. Carroll, U.S.R., Lieutenant J. H. Churchill, Captain Lyn Dimond, Lieutenant Ll. Lloyd, Captain V. E. Sorapure, and Lieutenant R. M. Wilson, all of the R.A.M.C. The first point established was that trench fever could not be produced by the bite alone of the infected louse. One man who received no less than 9518 bites by lice fed on trench-fever cases did not sicken, nor did another who was bitten 13,224 times over a period of 15 days. It was noted that while the younger patients with lice upon them always yielded to the desire to allay irritation by scratching, the older volunteers, in whom infection more frequently missed, were those who did not scratch. This observation led to the suggestion that infection might be due to the scratching in of the lice or of their excreta, and the successful result of the experiment of scarifying the skin and rubbing in crushed lice or the excreta of lice fed some time before on trench-fever patients at once confirmed this view, the volunteers so treated developing the disease after an incubation period averaging eight days. The interesting fact emerged that the louse was not infective immediately after a meal on a trench-fever patient, but became so only after the lapse of about seven days. In no case was infection carried by excreta passed within the first few days after the lice had been fed. The possibility of a life-cycle of the parasite completed within the body of the louse thus suggests itself, the curious point having further been established that the louse does not transmit the infection to its own offspring. With regard to the important subject of prevention, it was found that infected louse excreta remained virulent after a lapse of 16 days when dried at room temperature, retaining their virulence after exposure to direct sunlight or to a temperature of 56° C., sufficient to kill the parasites and their eggs. The practical import of this observation is evident in view of the current assumption that dry heat at 56° C. suffices to prevent infection by lice. The question of spontaneous infection was considered, but the crushed bodies of normal lice, as well as their excreta, were in no case found to be infective. In regard to the clinical course of the attacks of trench fever, some patients were afebrile throughout, although lice fed upon them reproduced the disease in febrile form. The percentage of individuals naturally immune was found to be very small. Age proved no bar to infection. Such immunity as resulted from an attack was of short duration, while the difference in clinical type appeared to depend rather upon the individual attacked than upon the source of infection. Sir William Leishman, who took part in the dis-

cussion, stated that the conclusions reached by the work of the Trench Fever Committee in France were similar to those of the Hampstead Hospital, except that certain recent experiments appeared to show that infection might be due to the louse-bite in the absence of its excreta. Dried urinary deposit from trench fever cases had also proved infective on scarification. The observations, as a whole, claim attention in view of the fact that numbers of infected men must at present be mixing with the civil population, while more will shortly be doing so. In the presence of lice this interchange constitutes a danger which must not be overlooked.

## A DIGEST OF THE FOREIGN MEDICAL PRESS.

THE scope of the daily review of the foreign press issued by the War Office has been extended from time to time by the preparation of supplements dealing with special subjects. A monthly medical supplement, compiled by the Medical Research Committee, was added to the list in January last, and since then has been widely circulated through official channels for the assistance of naval and military workers, particularly among the British and American Expeditionary Forces, where it has been warmly welcomed. Hitherto, this medical supplement has been inaccessible to medical men in general, who will be glad to know that the limitation has now been removed, and that the June and subsequent numbers will be obtainable from H.M. Stationery Office, either direct or through any bookseller, at the cost of 1s. each.

## THE ADMINISTRATIVE CONTROL OF VENEREAL DISEASES.

IN his address at the Institute of Public Health on May 29th Dr. E. W. Hope, medical officer of health for Liverpool, drew the lessons taught by experience of public measures directed against venereal diseases in that city. The results so far are of an encouraging character, but they reveal the necessity for further action unless matters are to drift back again to where they were before. Dr. Hope finds it farcical to allow diseased profligates of both sexes to wander in and out of gaols and workhouses without let or hindrance, when they are known to be in a highly infectious condition. Legislation is essential to restrain the movements of these people, ordinary hospital accommodation on the lines of the common infections being provided for them. The legislature of Victoria, Australia, has shown the way in requiring the infectious venereal patient to place himself under treatment and to attend regularly, and in penalising him for knowingly infecting any other person. In Liverpool an establishment has been opened, containing 12 beds, for the reception of young girls suffering from venereal diseases, who may be sent by voluntary agencies or found in the wards of the Poor-law institutions. A woman doctor is in charge and the patients are induced to remain until they are free from infection. Prior to the inauguration of the Government scheme, Liverpool had already tackled the problem of stillbirths and miscarriages through the medium of the Liverpool and District Trained Midwives' Association. Thanks to the willing coöperation of this association with the health department, the bodies of stillborn infants have been taken to one of the municipal mortuaries, where an examination has been made by the professor of bacteriology, resulting in the discovery of definite evidences of syphilis in some 15 per cent. of cases. With the assistance of the midwife it was possible to induce the majority of mothers to submit to the Wassermann test and subsequent treatment when necessary, and in some instances also the father was brought under treatment through this agency. An immense avenue for the effective treatment of syphilis is opened up by this means, and general opinion will support Dr. Hope in using every opportunity for broadening the methods of administrative control in venereal diseases.

## THE MEDICAL INSURANCE AGENCY.

A MEETING of the committee of the Medical Insurance Agency was held at the offices of the *British Medical Journal* on May 9th, when Dr. G. E. Haslip, the chairman, reported the death of the agent and secretary, Mr. Guy Elliston. The committee, in resolving that a letter of sympathy should be forwarded to the late Mr. Elliston's family, recorded their deep sense of loss and their feeling that the agency owed its success largely to Mr. Elliston's energy and business knowledge. The chairman presented the balance-sheet for the year ending Dec. 31st, 1917, as certified by the auditors, Messrs. Price, Waterhouse, and Co., together with his report as to the work of the agency for the year. The balance-sheet showed that, in spite of the fact that the country is in the fourth year of the war, the agency had maintained its business all round and had been able to allocate the substantial sum of £1000 to medical charities during 1917, the greatest sum distributed to benevolence in one year since the agency commenced. As to the main features of the balance-sheet, the surplus from the income and expenditure account available for medical benevolence was £929, as compared with £841 in the preceding year, while working expenses were less. In addition to the £1000 voted to medical charities, there was returned in 1917 to insurers through the agency the sum of £717, making a total of £1717 as a direct benefit to the medical profession. The chairman noted that both life and accident business showed an increase, while the shrinkage in revenue in regard to motor-car business, foreshadowed in his last report, had been exceedingly small. He reminded the committee that up to the end of 1917 the total sum allocated to medical benevolence reached £3405, while the sum returned to members insuring through the agency amounted to £6000, and added that for such good results a debt was owing to the Editors of *The Lancet* and the *British Medical Journal* for publicity received. The report of the chairman having been received and approved, an interim distribution of profits was made to medical charities, £500 being thus allotted. It was moved by Dr. H. A. Latimer, and seconded by Dr. Squire Sprigge, that this sum should be allocated as follows:—

| | |
|---|---|
| Royal Medical Benevolent Fund ... ... ... ... | £100 |
| War Emergency Fund ... ... ... ... ... ... | 100 |
| Royal Medical Benevolent Fund Guild ... ... | 100 |
| Belgian Doctors' and Pharmacists' Relief Fund | 100 |
| Epsom College Benevolent Fund ... ... ... ... | 50 |
| Royal St. Anne's School ... ... ... ... ... ... | 50 |
| | £500 |

As a result of this distribution, the total sums allocated to medical charities reached £3905. The chairman, in conclusion, handed round some

correspondence that had passed between the agency and the Royal Medical Benevolent Fund and Epsom College, whereupon it was decided that, when sending the present grants, it should be intimated that unless more satisfactory arrangements were come to over differences of opinion as to testamentary benefactions, the committee of the Medical Insurance Agency would have to reconsider its precedents when the next allocation of surplus funds took place.

## ACUTE EPIDEMIC ENCEPHALITIS IN FRANCE.

AT a meeting of the Académie de Médecine of Paris on May 5th M. Arnold Netter described under the title of "l'encéphalite léthargique épidémique" an epidemic of the disease which is attracting so much notice in this country. His paper is of great interest, not merely because of the addition to our limited experience of this apparently new disease, but because of the perspicuity—which we always expect from a French master—with which he reviewed the whole subject. In the early days of March a number of cases were seen at the hospitals and in private practice in Paris, of which the essential symptoms were fever, somnolence, and ophthalmoplegia. Though the disease was epidemic, the absence of multiple cases in a family excluded the idea of contagion. In some cases the paralysis affected also the face, palate, tongue, larynx, and pharynx. Though meningitis (tuberculous or cerebro-spinal) was usually diagnosed, its characteristic symptoms —rigidity, Kernig's sign, and irregularity of the pulse—were ill-marked or absent. Lumbar puncture yielded normal fluid not under increased tension. The course of the disease was very variable—a few days, weeks, or even months, and the mortality was about 50 per cent. The macroscopic lesions were not very manifest—congestion of the meninges and scattered hæmorrhages in the grey and white matter of the brain. Microscopic examination revealed cellular infiltration, especially around the vessels. The lesions showed a preference for the medulla, pons, and basal nuclei of the brain. When the symptoms recalled polioencephalitis superior the lesions corresponded. M. Netter considered the condition a diffuse interstitial encephalitis resembling that described by Dr. F. W. Mott and others in sleeping sickness. Probably the unknown agent was carried in the blood stream. He showed that the disease is not altogether new. In the spring of 1890, when the pandemic of influenza was terminating, a new epidemic termed "nona," characterised by lethargy, appeared in North Italy and Hungary. About the same time cases of lethargy, sometimes fatal, were recorded in most of the countries of Europe. At this time several writers recalled the fact that in 1712 a similar epidemic had occurred at Tubingue and was termed "Schlafkrankheit." In the winter of 1916–17 an epidemic with all the characteristics of the present one was observed in Vienna and formed the subject of discussion at the Society of Psychiatry. M. Netter rejects the view, frequently advocated, that lethargic encephalitis is a form of acute poliomyelitis, for the etiology, pathology, symptomatology, and evolution are different. Lethargic encephalitis is a disease of cold weather—winter and spring; epidemics of poliomyelitis occur in summer and autumn. The former is much more common in adults. The insignificance of the modifications of the cerebro-spinal fluid and the slightness of the meningeal symptoms contrast with the conditions in poliomyelitis. So does the mortality of 50 per cent. with 11 per cent. in the latter. In both maladies interstitial encephalitis is found, but the participation of the ganglionic cells, so important in poliomyelitis, is slight in encephalitis. Against the view that the disease is botulism is the fact that the characteristic manifestations of this disease—extreme mydriasis, dryness of the mouth, and obstinate constipation—are absent, while somnolence is absent in botulism. Moreover, in the latter, as in all forms of food poisoning, several cases occur together after taking the contaminated food. Against the view that the disease is a nervous form of influenza is the fact that the bacillus of the latter has not been found either during life or after death. M. Netter's conclusion is that lethargic encephalitis is one of the diseases the specific agent of which has not been discovered.

## THE PREVENTION OF MALARIA IN INDIAN CANTONMENTS.

MALARIA is admittedly the leading cause of inefficiency in troops throughout India, both in times of peace and war. In numerous instances the initial infection has been acquired in military cantonments, and the malady is to a large extent bred in the human inhabitants and the anopheline population of such cantonments. There is a considerable amount of malaria amongst Indian children in these cantonments, and they are the chief reservoirs of malarial parasites and the source from which a great deal of the malarial infection of troops spreads from year to year. In view of the importance of the subject Colonel P. Hehir, I.M.S., has recently published at Rawal Pindi some very interesting and valuable "Notes on the Prevention of Malaria in Cantonments," dealing with the measurement of malaria prevalence, reduction of breeding-places of anophelines, relapses and their prevention, and, lastly, quinine prophylaxis.

Of 3834 children in various cantonments examined on the plains during the malarial season there was an average of 60 per cent. with enlarged spleens and 40 per cent. with malarial parasites in the blood. In dealing with relapses, which Colonel Hehir regards as one of the most common factors in malarial infections, he says that cases treated with small doses of quinine will in all probability relapse, because the parasites of the asexual cycle in the spleen and bone-marrow are very slightly, if at all, affected thereby; relapse, however, is less likely to occur when the infection is promptly and vigorously treated, possibly because the older the asexual cycle the more resistant to quinine it becomes. When a relapse occurs with the presence of parasites in the peripheral blood during the administration of quinine by the mouth in sufficient doses, faulty absorption of the drug should be suspected. Records show quite distinctly that in those malarious stations where curative treatment by quinine is most persistently carried out relapses are decidedly fewer than where quinine treatment is adopted in a half-hearted kind of way. This brings Colonel Hehir to the vexed question lately raised in the Society of Tropical Medicine and Hygiene and elsewhere—namely, as to the utility of quinine prophylaxis of malaria.[1] His own opinion, supported by other experienced medical practitioners in India, is that the so-called failure of quinine as a prophylactic of malaria is due to improper dosage, defective methods of giving the drug, postponing its administration too long, or using it in prophylactic doses when it should have been given curatively. It is obvious that prophylactic doses of quinine can do little or no good when malarial infection is already present; such prophylactic doses may be instrumental in creating resistant strains of malarial parasites hardened against the effects of quinine, and these may perpetuate the infection in the individual and thereby through him lead

[1] THE LANCET, 1918, i., 301.

to dissemination of the disease. As regards the dosage of quinine for prophylactic purposes, the general experience of India seems to be that the best dose during the malarial season is as follows: (1) Where malaria is comparatively mild 5 gr. daily; (2) where the disease is moderately severe 5 gr. daily for six days and 10 gr. on the seventh day weekly; and (3) where malaria is very severe 5 gr. daily and 15 gr. on the seventh day weekly. It is, however, admitted that expert opinions on the dosage and method of administration of prophylactic quinine vary greatly.

In concluding his "Notes" Colonel Hehir remarks that given a *limited* endemic malarial area to deal with, as in most military cantonments in India, and given also unlimited funds, any trained tropical sanitarian would be able to formulate a scheme for the reduction of malaria, but in India such combination of conditions is practically non-existent. He is, therefore, the best military sanitary officer who can make the most use of the practicable measures that are at his disposal.

## A NEW REFLEX SIGN IN SPASTIC PARAPLEGIA.

UNDER the above heading a brief note appears in the *Correspondenz-blatt für Schweizer Aerzte* of April 13th. Dr. Robert Bing, of Basle, a well-known Swiss neurologist, noted the sign which he proposes to call the paradoxical ankle reflex some months ago in a case of syphilitic hemiplegia, and has since established its constant occurrence in organic spastic conditions involving one or both lower extremities. It is easy to elicit and of unequivocal significance. With the patient on his back the affected leg is put into the usual position for testing ankle clonus, being moderately flexed at hip and knee. The examiner's hand brings the foot into moderate dorsiflexion, with consequent slight tension on the Achilles tendon, while a sufficiently heavy percussion hammer is employed to strike the dorsum of the foot at any point along the imaginary line joining the malleoli. In positive cases there results an immediate contraction of the gastrocnemius and a corresponding flexion of the foot at least as marked as is usually obtained for the ordinary ankle—or Achilles—jerk. It is immaterial whether any particular tendon of the extensor group, including the tibialis anticus, extensor proprius hallucis and communis digitorum, is struck or not. In negative cases no movement results, or else simply a weak extension or dorsiflexion. The reflex obviously bears a close resemblance to the familiar Mendel-Bechterew reflex—the tarso-phalangeal reflex—and to the carpo-metacarpal reflex of Bechterew in the case of the upper extremity. In other words, it belongs to the group of what may be called inverted reflexes, where percussion on the extensor side of a limb is followed by contraction of the flexors, or *vice versa*. Dr. Bing mentions also the paradoxical and inverted reflex described by Piotrowski, percussion of the belly of the tibialis anticus producing a smart plantar-flexion of the foot; he is in doubt, however, as to the inclusion of the "Gordon" reflex in this category. He has found this new reflex present in four cases where the other more commonly elicited reflex signs of organic spasticity from cortico-spinal impairment were apparently absent, and justifiably claims it to be worth further investigation.

THE Royal Society's Croonian Lecture will be delivered by Major W. B. Cannon, A.M.C., on Thursday, June 20th, the subject being "The Physiological Basis of Thirst."

# THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

ON Tuesday, May 28th, the Council began its summer session at its offices, 44, Hallam-street, London, W.

Intimation was made that Mr. Tomes, the senior treasurer, had been reappointed Crown nominee for England for the period of one year, and that Sir Donald MacAlister, whose period of office as President expired on May 27th, 1918, had been reappointed representative of the University of Glasgow for five years.

Dr Robert Howden took his seat as the representative of the University of Durham, and Dr. Frederick Gowland Hopkins as the representative of the University of Cambridge. The appointment in each case is for five years.

*Re-election of President.*

Dr. NORMAN MOORE proposed, and Sir JOHN W. MOORE seconded, a motion that Sir Donald MacAlister should be re-elected President for a period of five years.

This motion was unanimously agreed to.

Mr. TOMES, in intimating his re-election to Sir Donald MacAlister, mentioned that this was the fourth term of office as President to which the latter had been elected.

*The President's Address.*

Sir DONALD MACALISTER having taken the chair then delivered his presidential address, in which he commenced by paying a cordial tribute to the past services of the late Sir George Philipson and Sir Clifford Allbutt, who had respectively served the Universities of Durham and Cambridge for lengthy terms. At the same time he welcomed their successors. He added that Sir Frederick Taylor, junior treasurer, whose health had given cause for anxiety, was regaining strength, though he would be unable to attend during the present session. He concluded his formal preamble by congratulating Dr. Norman Moore, chairman of the Business Committee of the Council, on his election to the Presidency of the Royal College of Physicians of London.

The effects of the long-protracted war, he said, could be traced in most departments of the Council's activity. With regard to finance, expenditure had increased and income diminished. At the close of 1917 the accounts showed that the surplus of revenue for the General and Branch Councils had fallen to £368 11*s.* 10*d.* For 1916 the surplus was £1014 14*s.* 1*d.*, and in the current year the prospect of a favourable balance was small. With regard to the Medical Register for 1918, there is, he said, a net increase of 338 in the number of registered practitioners, as compared with a net increase of 256 in that for 1917. The number removed on intimation of death is 801, as compared with 983 in the Register for 1917. It is certain, however, that the losses of the year are not yet fully known. The periodical revisions which reveal these to the Registrar, by the operation of Section 14 of the Medical Act, 1858, have of necessity had to be suspended during the war. When peace returns it will be our first duty to resume them. The new names registered in 1917 numbered 1134; while those in 1916 numbered 1202. The corresponding figure for 1914 was 1433. The Dentists Register showed a net increase of only 12, but measures had been taken to check the drain, but it will be some time before their effects are apparent. The medical students in actual attendance on professional instruction were, as reported in November last, more numerous in October, 1917, than at the beginning of the year. The Students Register for 1917 showed that the number registered by each of the three Branch Councils was higher than in the preceding year. The total registrations for 1917 amounted to about 2165, as against 1480 in 1913 and 1600 in 1914. The registrations for 1917 have, indeed, exceeded those for any year since 1891. A recent instruction has, moreover, with a view to the speedy training of men fit to serve as surgeon-probationers in the Navy, directed the conditional and temporary release from combatant duty of students who have completed their preliminary scientific examinations in physics, chemistry, and biology, and are thus ready for the second stage of the curriculum. They will be expected to finish

this stage within a prescribed time, to keep up their military training, and to accept service with the Navy when required. As this measure of release has probably taken effect by this time, I have suggested to the Minister of National Service that useful information would be gained regarding the prospect of replenishing the ranks of the profession hereafter were a census to be taken now on the lines of those instituted on behalf of the Council in 1917. From the figures so obtained we might ascertain in what degree the forecasts of a serious shortage of qualified practitioners in 1918 and 1919 are likely to be verified. The Ministry has adopted the suggestion and the census is now in progress. The influx of exceptionally young students, considerably below the age of 18, into the ranks of the first year, has led some deans and registrars to suggest to me that a proportion of them are being prematurely withdrawn from their ordinary school studies, to the detriment of their general education. The experience of the next year or two will show whether those are right who question the fitness of many very young students, now admitted to the first-year stage, to profit by a professional course. But in the meantime the question of raising now and permanently the minimum educational standard for entrance thereon may profitably be considered by the Education Committee. There is undoubtedly for the time being a "shortage of doctors," but there is apparently no shortage of potential medical students. The demands made by the war on the body of qualified medical practitioners are still increasing. The transfer of the duties of selection and distribution to the Ministry of National Service has led to better organisation and to fuller coöperation between the authorities and the civil Professional Committees. But these improvements in machinery alone have now proved inadequate to meet the greater need for man-power in the field and at home. Accordingly, the new Military Service Act has extended the service age-limit for the whole male population of Great Britain to 50, and for medical men to 55. The special legislation for our profession is perhaps a tribute to its general standard of healthy vigour; it is certainly an admission that the remaining supply of practitioners under 50 is too scanty to provide for all the fresh national requirements which the situation has induced. This latter conclusion has been urged on the Government for over a year past by professional bodies. The particular mode of meeting the situation now adopted by Parliament may not be that which all would favour. But we shall do well to accept it as an honour that, as we are held capable of a unique form of service to the State, so we are charged with a heavier responsibility than others. Under the new arrangements some readjustment of the functions of professional tribunals and committees will doubtless be required, both in England and in Scotland. Exemption from military service on "occupational grounds"—that is, on the simple ground that a man is a qualified practitioner, will almost necessarily be "conditional" on his undertaking, if required, to give professional service where there is urgent need of medical help. In other words, a certain amount of "redistribution" and "concentration" of civil practice will have to be arranged, in order that places that have yielded up all their younger doctors to the Army may not be left without medical provision. It is satisfactory to learn that in making such arrangements the Minister will continue to avail himself of the experience and local knowledge of the Professional Committees, which have so greatly assisted him under the earlier Military Service Act. The Midwives (Ireland) Bill, to which I referred six months ago, has passed into law.

The President then referred to the amendments and alterations in the Pharmacopœia made necessary by the limited use of glycerine, refined sugar, fats, and oils; and to the penal work of the Council, in which he reported the satisfactory position that intimations of laxity with respect to medical certificates had almost ceased to reach the Council. With regard to cases in which the penalty of erasure was in question, he said that certain practitioners had been convicted in the criminal courts of offences connected with the operations of the Military Service Acts, whose offences would require particular consideration, while considerable activity had been shown by the police and civil authorities in prosecuting impostors who had illegally assumed medical titles and functions. He added that in a number of such instances successful prosecutions had been instituted or supported by the Medical Defence Union. He concluded his address by saying that the general election of Direct Representatives to the Council would be further postponed from Nov. 19th, 1918, to some date to be fixed in the future.

*Appointment of Committees.*

The following committees were appointed:—

*Executive Committee:* Dr. Norman Moore, Sir F. Taylor, Mr. Tomes, Dr. Langley Browne, Mr. Hodsdon, Dr. Norman Walker, Sir John Moore, and Sir Arthur Chance.

*Penal Cases Committee:* Mr. Tomes, Sir F. Champneys, Dr. Norman Walker, and Sir Bertram Windle.

*Business Committee:* Dr. Norman Moore (chairman), the President, Dr. Macdonald, Dr. Norman Walker, and Dr. Magennis.

*Pharmacopœia Committee:* The President (chairman), Dr. Norman Moore, Dr. Caton, Dr. Barrs, Dr. Cash, Dr. Norman Walker, Sir John Moore, Dr. Kidd, and Dr. Hopkins.

*Finance Committee:* Mr. Tomes (chairman), the President, Sir F. Taylor, Mr. Hodsdon, and Sir A. Chance.

*Dental Committee:* The President (chairman), Mr. Waring, Mr. Tomes, Mr. Hodsdon, and Sir A. Chance.

*Dental Education and Examination Committee:* Mr. Tomes (chairman), the President, Mr. Waring, Mr. Hodsdon, Dr. Knox, Sir Arthur Chance, Dr. Symington, and Sir A. Newsholme.

*Students' Registration Committee:* Dr. Norman Moore (chairman), the President, Dr. Langley Browne, Dr. Mackay, Dr. Littlejohn, Sir Bertram Windle, and Dr. Kidd.

*Teaching of Preventive Medicine.*

Dr. MCVAIL moved:

That it be remitted to the Education Committee (1) to report to the November Session of the Council as to whether the Council should take any action towards promoting or systematising the teaching of preventive medicine in the medical schools throughout the country; and (2) to make such inquiry as the Committee may find necessary to enable it to report.

He said that the motion had nothing to do with the teaching of public health. It was directed specially to the maintenance of the health of the individual and to the prevention of diseases in the individual. Probably the best work that was being done in this matter was in connexion with child welfare and school medical inspection, because in treating disease in infancy and childhood disease in adult life was prevented. But more than that was wanted. His own view was that the general practitioner should have a larger influence in the prevention as distinguished from the treatment of disease. The preventive side should be developed as largely as possible. He was not thinking at present of the establishment of new chairs, but rather of the orientation of outlook with regard to existing chairs. Take the subject of physiology. One wanted to know how far it was being taught as a pure science and how much as an applied science. And the same thing applied to other subjects. The whole conduct of life from the point of view of national efficiency had got to be dealt with. Very likely a large part of education on preventive lines was already being given. If it was so, good and well. The Council ought to be made aware that it was being given. The share of the General Medical Council in national reconstruction might best consist in an effort to make clear how the system of medical education was proceeding on preventive lines. When that was found out they would be in a position, if necessary, to make suggestions.

Dr. ELLIOT SMITH seconded. He considered that it would be advantageous if teachers in medical schools were asked to consider this matter. The experience of the last four years showed how enormously wide preventive medicine was, and what an enormous part it could play in the life of a nation. There were certain aspects which might be suggested to the committee as profitable lines of inquiry in medical schools. It was obviously necessary that the teaching of physiology should be brought into relation with the practice of medicine. He also referred to the necessity of instruction as to cases of men who were discharged from the Army suffering from minor lapses of memory. Although it was not for the Council to dictate to the medical schools how they were to do their teaching, yet it would do good if the Council submitted questions and directed the attention of the schools to this matter.

Sir JOHN MOORE supported the motion and asked Dr. McVail to insert after the words "medical schools" "and in clinical hospitals."

Dr. MCVAIL accepted the suggestion.

Sir A. NEWSHOLME also approved of the motion. He said that it was not intended to set up a definite course. The thing to aim at was that the whole of the course of the medical student should be, so to speak, "inoculated" with preventive medicine. He spoke particularly of the necessity of medical men conveying warnings in cases of tuberculosis and venereal disease.

Dr. NORMAN MOORE insisted on the necessity of the medical student being well-grounded in subjects which he could carry with him into his professional career.

Dr. MACKAY said that they all agreed that the teaching must be more and more directed towards the practical.

The PRESIDENT pointed out that the committee could not plunge into an inquiry with questions to medical schools until it had come back to the Council with a report.

The motion was agreed to and the Council adjourned.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*Traumatic Shock.*

AN important discussion took place recently at the Society of Surgery on the vexed question of the exact nature of traumatic shock. M. Villechaise from his own experience suggested a possible confusion with acute sepsis. M. Quénu upheld the view that traumatic shock proper, as seen in war surgery, is due to an intoxication, which may be either purely chemical from spontaneous autolysis of dead tissue, or purely bacterial, or a combination of the two. Should the toxæmia begin in the absence of microbes it is later accentuated by their action on the tissues, especially muscle, and finally aggravated by bacterial secretions or toxins. Nerve shock is not an entity apart from nervous concussion. Hæmorrhage, fatigue, and cold are factors conducing to shock, but not constituting its actual essence. M. Nimier, on the other hand, defined shock as a drop in nerve tone to a level below the normal, distinguishing among efficient causes: (*a*) mechanical violence, (*b*) loss of blood, (*c*) intoxication by mechanical or (*d*) septic proteolysis of the tissues. M. Soubeyran expressed himself similarly, adding a classification of shock into immediate, secondary, and primitive. MM. L. Vallée and L. Bazy held with M. Quénu in regarding shock as often toxæmic in origin, while differing from him as to the nature of the toxins which enter the blood at the seat of the trauma. Toxins resulting from muscular disintegration are neither abundant nor active enough to provoke the acute symptoms of shock; these must be of microbic origin. Certainly the toxic power of the anaerobes found in gunshot wounds is often feeble, but they find conditions favourable to increase of virulence in the glycogen of the muscle, in the acidosis which is present in all severely wounded men, in the slowing of the circulation and consequent loss of the antitryptic blood serum, while the presence of foreign bodies and associated bacteria in the wound have a further influence in arresting phagocytosis.

*Regeneration of Bone after Resection.*

It has been held that regeneration of bone from the periosteum left behind after primary resection generally does not occur unless a certain degree of infection is present to start the osteogenesis. In a communication to the Society of Surgery MM. Leriche and Policard suggest that this view is inexact. In their experience the essential thing in a subperiosteal resection is to raise the whole periosteum with the elevator pressed firmly against the bone, thus obtaining, not merely the simple fibrous layer, but the zone lying beneath this. When this is done regeneration of bony tissue occurs without infection playing any part whatever. Operating thus the two surgeons named ensured (1) regeneration of the neck of the femur following resection at the level of the trochanter five hours after the receipt of the wound; (2) regeneration of the upper extremity of the humerus, resection being done seven hours after the injury; (3) regeneration of the elbow in three cases after resection at the third, tenth, and eighteenth hour respectively; (4) regeneration at the level of the wrist, the resection in this case being at the seventh hour.

*Pneumonia among Children after Air Raids on Paris.*

MM. Netter and Triboulet have recently reported to the Medical Society of the Hospitals a series of 21 infants from the Hôpital Trousseau creche who had contracted pneumonia and broncho-pneumonia as a result of being taken to underground cellars at night. Of the total number 7 died, 6 recovered, 7 are improving, and 1 is still in a grave condition. The exciting cause of the illness in each case was exposure to cold.

May 25th.

# Correspondence.

"Audi alteram partem."

## THE FUTURE OF THE SPECIAL THROAT AND EAR HOSPITALS.

*To the Editor of* THE LANCET.

SIR,—The annotation in your issue of May 25th upon the suggested amalgamation of the existing throat and ear hospitals of the metropolis comes at a particularly opportune moment. Having no connexion with any London hospital, and therefore with no axe to grind, but having at heart a deep interest in the future of laryngology and otology, I may perhaps be permitted to state why in my opinion such amalgamation is not only desirable but which would also if effected tend to make London the first centre in Europe for the education and practical training of the future specialist in these subjects, a position which, up to the present, it certainly has not enjoyed. As a student I had the opportunity of studying laryngology and otology in Vienna, Berlin, and several other continental cities, and what struck one as the reason of their success was not so much the actual teaching or training which was to be had as the very excellent organisation which brought together under *one* roof a large number of patients and a competent staff of teachers and clinicians, so that the former received the best and most up-to-date treatment and the latter imparted the last word so far as modern teaching and practical training were concerned. The fact that one could attend, say, four or five teachers of laryngology, or an equal number of teachers of otology, during the course of a single forenoon and upon every week-day was an advantage not to be lightly dismissed. It was thus possible to compare the methods of imparting information and of carrying out the details of practical treatment by men of repute without rushing about the city from one hospital to another, without losing valuable time and without an unnecessary dissipation of energy.

At the present time, when it is impossible, and in the future when it is unlikely that any self-respecting Britisher or American will hie himself to the above-named continental clinics, London has, if it has the sense to grasp it, the unique opportunity of establishing a great and central throat and ear clinique with a whole-day service, and with a well-equipped and competent staff, if only the petty rivalries and jealousies between the numerous special hospitals were sunk in the higher interests of education and in the interests of the suffering poor.

Now is the time for action. That such an opportunity will present itself again is hardly conceivable. Surely amongst the army of laryngologists and otologists of the metropolis there are a sufficient number of influential men capable of carrying out a scheme which, if accomplished, would afford a more efficient service for the public, would be run more economically so far as working costs are concerned, and which would in the future provide a teaching centre of National and probably also of Imperial importance.

Allow me, Sir, the liberty of making two practical suggestions:—

1. That the members of the staffs of all the throat and ear hospitals of the metropolis be invited to attend a special meeting to discuss the question of amalgamation, and that the meeting be presided over by a neutral chairman.

2. That the managers of the King's Fund be requested to reconsider the amount of financial assistance they would be prepared to give were the amalgamation of the various special throat and ear hospitals a *fait accompli*.

I am, Sir, yours faithfully.

Manchester, May 27th, 1918. WILLIAM MILLIGAN.

*To the Editor of* THE LANCET.

SIR,—In the annotation which appears in the issue of THE LANCET for May 25th on the above subject there are one or two points which have been misapprehended as well as several which have been ignored, and these when they are made clear themselves throw upon the question of amalgamation of these hospitals a light very different from that supplied by the writer of the article.

To begin with, it is not true to say that these hospitals "charge a small fee for attendance." That manner of

statement conveys an impression which is at once unfair and damaging to the reputation of these hospitals, the implication being that they are paying institutions. It is true that they welcome and indeed ask for, a subscription from their patients (generally speaking, the sum is 1s.!), but of these patients at the Central London Throat and Ear Hospital, that with which I am connected, nearly one-third, 30 per cent. actually, are admitted absolutely for nothing. As for the others who "pay," they belong to the usual hospital class, as anyone who cares to visit the hospital can see for himself. If these hospitals were obliterated the people who would suffer would be the London sick poor.

Secondly, it is true that during the last few years special throat and ear clinics have been organised at the large general hospitals, and they are doing good and extensive work. Yet since these new departments have been opened the special hospitals, instead of becoming less, have become more busy.

The fact is, and here is where most observers forgetful or unaware of the recent progress and development of our specialty run into error—the fact is that oto-laryngological work has grown and extended to such a remarkable extent that the amount of that work to be done now in the community is enormous.

Your annotation mentions the increase in the specialist staff at certain of the general hospitals. That increase would have to be trebled to cope with the work if the special hospitals were closed. At the Central London Throat and Ear Hospital there are from 8 to 10 surgeons and assistant surgeons, dealing with over 10 000 *new* patients, and performing between 3000 and 4000 minor operations, and a proportionate number of major operations annually! From the teaching point of view our facilities are in process of improvement. But before the war our hospital was a centre of wide repute, training men as specialists from all over the world outside of Europe.

Again, it is true, as your annotation says, that the distribution of these hospitals is faulty. But that fault could be, and should be, remedied by a wider distribution, not by fusion and reduction in their number.

As to our future I am not, of course, qualified to speak for other special throat and ear hospitals of London, but I assure you that at this hospital we regard the future with quiet confidence, just as we regard the past with quiet pride. It is 13 years since King Edward's Hospital Fund for London gave us a penny, and yet we have not only survived this unjust and inequitable treatment, we have actually progressed in well-doing, and we believe we shall continue to progress. At the same time we feel indignant that a hospital such as ours, which we know to be doing a great charitable work, should have been exposed to difficulties and dangers because 13 years ago the King's Fund became obsessed with an idea of amalgamating what at that time they considered to be redundant hospitals; and I am glad of an opportunity to express in the publicity of THE LANCET a deep sense of indignation at the manner in which the Central London Throat and Ear Hospital, and through it the sick poor of London, has been, and is still being, treated by that body.

I am, Sir yours faithfully,

DAN MCKENZIE,
Surgeon, Central London Throat and Ear Hospital.

Wimpole-street, W., May 25th, 1918.

## THE PRIMARY EXAMINATION OF THE F.R.C.S. ENG.

*To the Editor of* THE LANCET.

SIR,—Having been a demonstrator and lecturer on, and being still a teacher of, anatomy, and a past examiner in anatomy for the Primary Fellowship of the Royal College of Surgeons of England, I have been much interested in the correspondence again evoked by Sir William Osler's "open letter." One or two facts in connexion with this examination are apt to be overlooked when exception is taken to the low percentage of "passes." It is, as it were, an "entrance" examination to the highest surgical diploma in the world, a diploma which should be jealously safeguarded. It is necessary for a candidate to pass in both subjects—physiology and anatomy—at one and the same time; this occasions many failures. A considerable number of aspirants "have a shot at the examination," and are not—certainly not in the opinion of their teachers—worthy of success. With many others—being a surgeon—I am of opinion the examination, and particularly in anatomy, should be as practical as possible, and should bear essentially upon knowledge which will be of use in the final examination and in after practice. To this end I believe that I was the first to introduce a living model in the *viva voce* part of the examination in anatomy. Such an innovation, however, did not please the candidates of those days, although I ventured to remind some that their future work would be more upon the living than the dead! There is no doubt that after the war both teaching and examination will have to be based upon truly practical and utilitarian lines.

I am, Sir, yours faithfully,

Harley-street, W., May 25th, 1918. W. MCADAM ECCLES.

## THE BACTERIOLOGY OF TRENCH NEPHRITIS.

*To the Editor of* THE LANCET.

SIR,—In the bacteriological investigation of a number of cases of "trench nephritis" I have made some observations which may prove of value and assistance to others working at the pathology of this obscure condition. With the present pressure of overwork it is uncertain when it will be possible to publish in full the details, and this preliminary note merely gives the main conclusions I have been able to draw. I may take it that the symptomatology of the condition is now well known, so will pass at once to the bacteriological aspects.

In some of my cases I have made daily cultures for four months. The urine was incubated alone for two or three hours, after which a loopful was taken and a plate of bile-salts, neutral-red lactose agar, was inoculated and spread in the usual way, a note being made of number and character of colonies. When the urine contained a fair quantity of blood I was able to grow a non-lactose-fermenting organism. This was removed from the plate and inoculated first into a broth tube and then into litmus sugars and litmus milk. From each of my cases the organism grown showed the same sugar and milk reactions—namely:

Litmus milk, no change.
" glucose and litmus saccharose, acid formation, but no gas.
" mannite and litmus lactose, no change.

The organism in question is a bacillus of the typhoid group. It is motile. It does not stain with Gram. It grows freely on nutrient agar. No other organism previously described displays these peculiar sugar reactions, so that I have not been able to identify it with any known organism.

I intend later to publish a fuller account of the subject, together with the results of vaccine treatment. I am indebted to Dr. A. P. Green for the trouble he has taken in assisting me in the wards.—I am, Sir, yours faithfully,

M. J. ROWLANDS, M.D. Brux., M.R.C.S., L.R.C.P.,
Clinical Pathologist, Mile End and Bethnal Green Military Hospitals; late Pathologist, Royal Victoria Hospital, Netley.

May 17th, 1918.

## ON CAUSALGIA AND ALLIED CHANGES IN THE JOINTS.

*To the Editor of* THE LANCET.

SIR,—Reference has lately been made in THE LANCET to the causalgia and to certain changes in the joints which sometimes result from gunshot wounds and other injuries of nerves, for which various modes of treatment have been suggested. This causalgia and these arthritic troubles at the present time are undoubtedly responsible for a good deal of suffering and misery; I shall therefore be glad to make a few suggestions with regard to their pathology and treatment which, I think, may be of use to those who just now have the care and treatment of such cases.

Upwards of 30 years ago, whilst endeavouring to arrive at the true pathology of rheumatic arthritis, my attention was fortunately directed to a work by Dr. Weir Mitchell, Dr. Moorhouse, and Dr. Keen,[1] who were the first to call attention to the effect of nerve injuries on the nutrition of the joints, their observations being based upon their experience gained in the American Civil War.

The first symptom appears within a few days after the injury of the nerve

"It consists essentially of a painful swelling of the joints, which may attack any or all of the articulations of a member. It is distinct from the early swelling due to the inflammation about the wound itself, although it may be masked by it for a time; nor is it merely a part of the general œdema which is a common consequence of wounds. It is more than these—more important, more persistent. Once fully established it keeps the joints stiff and sore for weeks or months. When the acute stage has departed the tissues about the articulations become hard, and partial ankylosis results, so that in

[1] Gunshot Wounds and Other Injuries of Nerves, by Dr. Weir Mitchell, Dr. Moorhouse, and Dr. Keen. Philadelphia, 1864.

many cases the only final cause of loss of motion is due to this state of the joints. Of all the agencies which impede movement it is the most difficult to relieve. Were we asked to state in what essential respect these lesions differ from subacute rheumatic disease of the same parts, we should certainly be at some loss to discern a difference."[2]

In a subsequent work[3] Dr. Weir Mitchell again refers to the curious arthritic changes which may follow dislocations, ball wounds, contusions, or even compression of the nerves.

"We may have one articulation—and if only one a large one—involved, or perhaps all the joints of a finger, or every joint in the hand, or of the entire limb may suffer. The swelling is never very great, the redness usually slight, and the tenderness on touch or motion exquisite. ..... It is quite clear that injuries of the spine, diseases of this organ or the brain, and wounds, or any form of lesion of nerves are capable of developing in the joints inflammatory conditions, usually subacute, and which so precisely resemble rheumatic arthritis in their symptoms and results that no clinical skill can discriminate between the two."

In my second Croonian lecture, published in THE LANCET (vol. i., 1886, p. 673), I quoted very freely from Dr. Mitchell's works, showing how subacute inflammation of the joints may be brought about by nerve lesions. Reference is also made there to two cases recorded by Sir William Gull,[4] in which lesions of the cord were "attended with an affection of the joints not to be readily distinguished from that which occurs in acute rheumatism," and I directed special attention to Sir William Gull's very suggestive remarks upon these cases. The views of Scott Alison,[5] Brown-Séquard,[6] and Charcot[7] upon the nutritive disorders in the articulations consecutive on lesions of the nervous centres were also dealt with. Brown-Séquard's view regarding the arthritis of paralytic patients and the painful sensations in the muscles associated therewith was that they were due to a subacute inflammation in the painful limbs, "the result of an irritation of the vaso-motor or nutrition nerves of the encephalon." According to recent investigations, however—

"Pathological facts appear to show that the trophic nerves of the bones and joints are found in the mixed nerve trunk and that they issue along with the motor fibres from the anterior cornua of the spinal cord, where they are, like the muscular trophic fibres, connected with a group of large caudate cells," and "it seems now generally admitted that both irritative and destroying lesions of the ganglion cells of the anterior horns of the spinal cord and their homologues in the medulla oblongata, pons, and crura, or of the efferent fibres which unite these cells with the periphery, may give rise to active atrophy of muscle."[8] Moreover, "Pathological observations render it probable that the ganglion cells of the anterior horns exercise a controlling influence upon the nutrition of the bones and joints, while those of the posterior horns stand in a similar relation to the nutrition of the skin and its appendages."[9]

It is not unreasonable, therefore, to assume that the arthritic changes following upon gunshot wounds or other injuries of the nerves, as well as the arthritic changes in rheumatoid arthritis, are due to, or associated with, changes in the spinal cord, commencing with congestion or myelitis and chiefly affecting the ganglion cells of the anterior horns.[10] If this be the case the natural influence would be that the treatment should be directed to the abatement of this condition, which probably can be done most effectively by cupping or blistering the spine, and more particularly the parts in the neighbourhood of the cervical or lumbar enlargements from which the affected nerves emerge, and by maintaining the counter-irritation for some ten days or a fortnight at a time.

Dr. Weir Mitchell, Dr. Moorhouse, and Dr. Keen, after exhausting their ingenuity in devices for the relief of the intractable causalgia associated sometimes with nerve wounds obtained the best results by thorough and repeated blistering of the spine—a method of treatment for arthritic troubles which was first suggested by Dr. Weir Mitchell's father, Dr. J. K. Mitchell,[11] in 1831. He reports some cases of a striking character in which arthritic symptoms supervened upon injury to the spinal cord. These cases were successfully treated by applying cupping glasses to the spine, abstracting from 8 to 16 ounces of blood from the neighbourhood of the cervical or lumbar enlargements, according as the upper or lower extremities were affected, and, if the cupping did not afford relief, applying blisters to the same regions.

As regards the treatment of rheumatoid arthritis, I have obtained more satisfactory results by the use of counter-irritation than by any other method.

May I add, in conclusion, that it is of the utmost importance when recourse is had to counter-irritation or cupping, that it should be applied to the right spot—namely, the neighbourhood of the cervical or lumbar enlargement, according as the upper or lower extremities are affected; applied to the dorsal region, for example, it is much less efficacious; and if blisters are applied they should be of fair size—one of four to six inches in length by two inches in breadth, on each side of the spine, and the blistered surface should be dressed daily with savine ointment for a week or 10 days—the counter-irritation being thorough and prolonged. In some cases this treatment, especially in the early stage, may be advantageously combined with the use of opium to relieve the pain. Full details, however, of this mode of treatment will be found in an article of mine in Latham and English's System of Treatment, vol. i., pp. 405–7.

I am, Sir, yours faithfully,

May 17th, 1918. P. W. LATHAM.

[2] Loc. cit., p. 83.
[3] On Injuries to Nerves, Philadelphia and London, 1872, p. 168.
[4] Guy's Hospital Reports, third series, vol. iv., 1858, Cases 27 and 28.
[5] Arthritis Occurring in the Course of Paralysis, THE LANCET, 1846, vol. ii., p. 278.
[6] THE LANCET, July 13th, 1861.
[7] Lectures on Diseases of the Nervous System, New Sydenham Society, 1877, p. 92.
[8] Ross: Diseases of the Nervous System, second edition, vol. i., p. 241.
[9] Loc. cit., p. 825.
[10] In Brain, vol. xxv. (1902), p. 418, a case (No. 4) of great interest is reported by Dr. F. W. Mott, F.R.S., and Mr. A. F. Tredgold of chronic rheumatoid arthritis, giving an excellent account of the changes in the spinal cord, as exhibited on microscopical examination.
[11] On a New Practice in Acute and Chronic Rheumatism. By J. K. Mitchell, M.D. American Journal of the Medical Sciences, 1831, vol. viii., p. 55.

## THE CAUSATION OF MYOPIA.

*To the Editor of* THE LANCET.

SIR,—In reference to the annotation in your issue of May 11th on this subject a point which should be emphasised, and which my experience here daily confirms, is that whatever be the foundation cause of myopia there is a danger in attention being directed to one side only of the predisposing factors involved, and a side which I think is *not* the vital one. I believe that the essential factor in the prevention of myopia is the attainment of good health and sound physique by all the means possible—healthy housing, fresh air, good food, exercise, and avoidance of the various infections common to early life; and I would like here again to put the question whether myopia is not more probably due to some chronic toxic absorption which interferes with the proper development of the sclerotic.

Last week I examined 300 agricultural labourers, and found only one case of axial myopia above one dioptre. I have in the last three days seen a corresponding number of miners, labourers, &c., and found 18 cases of axial myopia above one dioptre. The predisposing factors in school surroundings which are supposed to be so important are common to both in this part of the country.

I am, Sir, yours faithfully,

J. KIRK, M.D.,
Oculist to Edinburgh National Service Boards.

Edinburgh, May 16th, 1918.

## THE PREDISPOSITION TO CANCER OF THE TONGUE.

*To the Editor of* THE LANCET.

SIR,—I am interested in the subject of cancer of the tongue, and am anxious to ascertain whether there is a family predisposition to the disease such as occurs in some other forms of cancer.

Will any of your readers kindly tell me whether they know at first hand of (*a*) cancer of the tongue occurring in more than one member of the same generation of a family; (*b*) in successive generations of the same family—i.e., father and son; (*c*) whether in the rarer case of lingual cancer in women the disease has occurred in families with a markedly cancerous history? I am, Sir, yours faithfully,

10A, Chandos-street, W., May 25th, 1918. D'ARCY POWER.

THE PARLIAMENTARY REPRESENTATION OF THE COMBINED UNIVERSITIES.—Mr. Herbert G. Williams, hon. secretary to the Combined Universities Conservative and Unionist Association, writing from 120, Ashley-gardens, London, S.W. 1, urges graduates of the Universities of Durham, Manchester, Liverpool, Leeds, Sheffield, Birmingham, and Bristol, to write to the registrars of their respective Universities for the forms of application for registration as electors. The relatives of those graduates who are serving in the Army or Navy can obtain the forms of application in order to forward them, and all graduates serving overseas will be able to vote, either by post or by proxy. Mr. Williams will send further particulars relating to the University franchise to any applicant.

# The War.

## THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

*Killed.*

Capt. St. J. A. M. Tolhurst, New Zealand A.M.C., received his medical education at Guy's Hospital, London, and qualified in 1907. Prior to joining the Expeditionary Force he was in practice at Wellington, N.Z., where he was honorary surgeon to the local hospital.

Surg. A. L. Pearce Gould, R.N., attached to the Royal Marine Light Infantry, was educated at University College Hospital, London, and at Oxford, and qualified in 1913. He joined the Navy a few hours before the declaration of war, and served at Haslar and in the Mediterranean, and on recovering from an attack of enteric fever was attached to the R.N. Hospital at Plymouth. Later he became medical officer to the Royal Marine Light Infantry.

*Died of Wounds.*

Capt. D. H. Hall, R.A.M.C., attached Seaforth Highlanders, qualified at Dublin in 1915, and thereupon joined up.

Capt. J. Venables, New Zealand M.C.

Lieut. W. E. Brown, R.A.M.C., attached Duke of Wellington's Regiment, came over with the Canadian Expeditionary Force, and held the position of Captain in the Canadian Army Medical Corps.

*Died.*

Capt. L. H. Y. Stephen, R.A.M.C., was a student at Guy's Hospital, London, and qualified in 1897. He held appointments at the Royal Isle of Wight Hospital and at the Leicester Infirmary, and later proceeded to South Africa, where he was for a time surgeon to the Field Force. He died at Bournemouth.

Major A. Westlake, R.A.M.C.(T.), was educated at Edinburgh and at Manchester Universities and qualified in 1884. For some years past he had a large practice at Great Grimsby and held several local appointments. He died at his residence.

*Wounded.*

Lieut.-Col. D. Ahern, D.S.O., R.A.M.C.
Lieut.-Col. W. H. S. Burney, R.A.M.C.
Lieut. J. Sullivan, R.A.M.C., attached R. Irish Regiment.
Capt. L. H. H. Boys, R.A.M.C., attd. R. Warwick Regiment.
Capt. W. H. Morrison, R.A.M.C.
Capt. F. L. P. G. Bennett, R.A.M.C.
Major N. W. Kidston, R.A.M.C.
Capt. H. Mendelssohn, Australian A.M.C.
Capt. F. R. M. Heggs, R.A.M.C.
Capt. R. J. Aherne, R.A.M.C., attached N. Staff. Regiment.
Capt. A. Buchanan, R.A.M.C.
Capt. H. E. Creswell, M.C., R.A.M.C., attached R. Fus.
Lieut. S. W. Shaw, R.A.M.C., attached Herts Regiment.
Capt. E. MacA. Gordon-Glassford, M.C., Australian A.M.C.
Capt. R. K. Rae, Australian A.M.C.

*Previously reported Missing, now reported Prisoners in German Hands.*

Temp. Surg. H. C. Broadhurst, R.N.
Capt. J. B. Ball, R.A.M.C., attached W. Yorks Regiment.
Capt. W. J. Isbister, M.C., R.A.M.C., attd. Border Regiment.
Capt. S. J. Darke, M.C., R.A.M.C., attd. R.W. Surrey Regt.
Capt. S. V. P. Pill, R.A.M.C., attached Wilts Regiment.
Capt. J. Sullivan, R.A.M.C.
Capt. F. C. Nichols, R.A.M.C., attd. S. Staff. Regiment.
Capt. G. Torrance, R.A.M.C.

*Prisoner in German Hands.*

Lieut. E. N. P. Martland, R.A.M.C., attd. London Regiment.

## CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Surg. A. L. Pearce Gould, R.N., attached R.M.L.I., killed in action, youngest son of Lieut.-Col. Sir A. Pearce Gould, K.C.V.O., R.A.M.C.(T.), of Queen Anne-street, London.

Second Lieut. E. P. H. Mitchell, Border Regiment, attached R.A.F., accidentally killed whilst flying abroad, only son of Dr. T. H. Mitchell, of Ambleside, Westmorland.

Lieut.-Col. C. K. James, D.S.O. and Bar, Border Regiment, attached West Yorks Regiment, killed in action, second and only surviving son of Dr. C. A. James, of Upper Clapton, London.

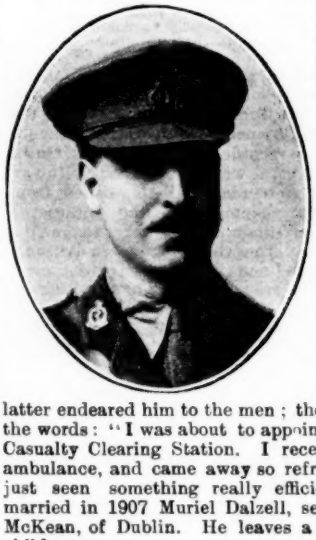
Lieut. A. Bowen, Manchester Regiment, killed in action in August, 1915, sixth son of the late Dr. E. Bowen, of Birkenhead.

## OBITUARY OF THE WAR.

### HUGH STEWART, M.B., B.CH. DUB.,

MILITARY CROSS, DISTINGUISHED SERVICE ORDER, LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel H. Stewart, who was killed in action in France on April 12th, at the age of 38, was elder son of the late Captain Hugh Stewart, of Foxrock, co. Dublin, and grandson of Sir Hugh Stewart, Bart. He studied at Trinity College, Dublin, taking his M.B., B.Ch. in 1904. Two years later he entered the R.A.M.C., and after some years of service in India went out to France on the outbreak of the war with the original Expeditionary Force and served there until his death. He was four times mentioned in despatches and was awarded both the Distinguished Service Order and the Military Cross. He met his death while evacuating the wounded from an advanced dressing-station of which he was in charge.

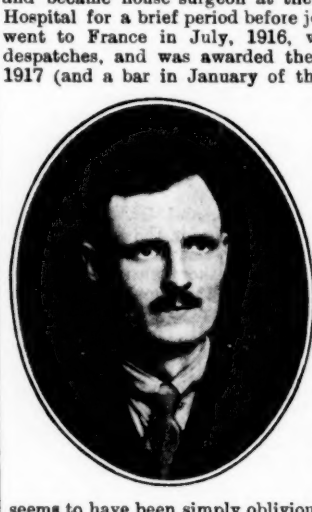


His commanding officer writes of Colonel Stewart's efficiency and sympathetic nature. The latter endeared him to the men ; the former is evident from the words : "I was about to appoint him to command —— Casualty Clearing Station. I recently inspected his field ambulance, and came away so refreshed, feeling that I had just seen something really efficient." Colonel Stewart married in 1907 Muriel Dalzell, second daughter of Hugh McKean, of Dublin. He leaves a widow and three young children.

### JOSEPH STEPHEN WALLACE, M.R.C.S. ENG.,

MILITARY CROSS ; MAJOR, ROYAL ARMY MEDICAL CORPS.

Major J. S. Wallace, who was killed in action on March 28th, at the age of 31 years, was eldest and last surviving son of the late Joseph Wallace and of Mrs. C. Leigh Hunt Wallace, of Portland-place, London. Educated at University College School and Hospital, he took the Conjoint diploma in 1915, and became house surgeon at the Great Northern Central Hospital for a brief period before joining the R.A.M.C. He went to France in July, 1916, was twice mentioned in despatches, and was awarded the Military Cross in July, 1917 (and a bar in January of this year), for conspicuous gallantry and devotion to duty.



When in charge of bearing parties he so organised and handled his stretcher-bearers amidst heavy shell and gas barrage that a very large number of our wounded were brought into safety. His conduct was conspicuous throughout for coolness, good judgment, and utter disregard of danger. He had been knocked out by gas the day before, but insisted on remaining at his post.

He received his majority only five days before he met his death.

Letters from his superior officers and others make it clear that Major Wallace was a man of no ordinary metal. He seems to have been simply oblivious of personal danger or of regard for his own comfort. 130 stretcher-bearers write their testimony to this fact. A gunner major slept in his bed while he occupied the floor. He made a point in cold weather of accompanying his orderly to the top of the communicating trench to make hot drinks for his returning men. Add to this an unfailing courtesy and there is little wonder that Major Wallace has left a fragrant memory to temper the sense of loss felt by all those who knew him.

## HENRY WASHINGTON BATCHELOR, M.R.C.S. ENG.,
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major H. W. Batchelor, who was killed in action in France on March 24th, was eldest son of the late Dr. H. T. Batchelor, of Queenstown, Cape Colony. He was educated at Berkhamsted, where he was a prominent member of the football XV. and cricket XI., representing the school at the Public Schools gymnastic competition at Aldershot. He took his medical course at the London Hospital, obtaining the Conjoint qualifications in 1912, and after holding a resident post at the Poplar Hospital became house physician to the cardiac department of the London Hospital, where Sir James Mackenzie speaks with appreciation of his work. He joined the R.A.M.C. on August 7th, 1914, proceeding immediately to France, where he remained until his death, except that he was recalled for three months in 1916 for work at the Military Heart Hospital at Hampstead. Shortly before his death, which occurred while in charge of a field ambulance, he was promoted to be acting major. Major Batchelor married in 1916 Kathleen Mary, younger daughter of the Rev. P. H. Kempthorne, rector of Wyck Risington, Gloucestershire.

## ROBERT WILLIAM BRANDER, M.B., CH.B. GLASG.,
SURGEON, ROYAL NAVY.

Surgeon R. W. Brander, who died on May 1st as the result of an accident, at the age of 25 years, was third son of George Brander, Procurator-fiscal of Fife. Educated at Glasgow Academy and University, where he won gold medals in anatomy and surgery, he graduated M.B., Ch.B. in 1914, and was house surgeon at the Western Infirmary when war was declared. He volunteered at once for naval service, and was appointed surgeon on an Admiralty cruiser, and later house surgeon to the Rothesay Naval Hospital. Recently he held an important post at Rosyth, where he met his death by being run down by a goods train. Surgeon Brander was an accomplished linguist whose knowledge of French and German often proved of value on shipboard. He was an expert swimmer and gymnast and a general favourite in social life. His funeral in Glasgow was largely attended.

## WILLIAM BERESFORD ROBINSON, M.B., B.S. LOND.

Dr. W. B. Robinson, who died on May 12th at the age of 29, came from Christchurch, N.Z., entering Guy's Hospital in October, 1907, and qualifying in 1912. After holding resident appointments at the hospital where he was a member of the hospital shooting eight, he went into private practice in Sutton, but at the outbreak of war he joined the 2nd London General Hospital, and there is no doubt that his death is a direct result of his military service. He was not commissioned, but he refused to give up work at the hospital when he found that the climate did not agree with him. Always cheerful and ready to lend a helping hand, his loss is keenly felt by those associated with him, who feel that a career of promise has been cut short. He leaves a widow and one child.

## MENTIONED IN DESPATCHES.

A despatch received from Field-Marshal Sir Douglas Haig, K.T., G.C.B., G.C.V.O., K.C.I.E., Commander-in-Chief of the British Armies in France, covering the period from Sept. 25th, 1917, to midnight, Feb. 24th–25th, 1918, is being issued in six supplements to the *London Gazette*, and amongst those mentioned in the supplements already to hand for distinguished and gallant services and devotion to duty the names of the following medical officers appear :—

*Royal Navy.*—Temp. Surg. W. J. McCracken, D.S.O., M.C., attached R.N.V.R.

*Staff.*—Maj. and Bt. Lt.-Col. E. Ryan, D.S.O., R.A.M.C.

*Army Medical Service. Headquarters Staff.*—Lt.-Gen. Sir A. T. Sloggett, K.C.B., K.C.M.G., K.C.V.O., K.H.S.; Maj.-Gen. C. H. Burtchaell, C.B., C.M.G.; Maj.-Gen. Sir W. G. Macpherson, C.B., K.C.M.G., K.H.P.; Temp. Capt. J. Biggam, R.A.M.C.; Maj. R. B. Black, D.S.O. (R. of O.), R.A.M.C.; Lt.-Col. W. R. Blackwell, R.A.M.C.; Capt. L. G. Bourdillon, D.S.O., M.C., R.A.M.C.; Col. H. A. Bray, C.M.G., R.A.M.C.; Capt. A. D. Child, R.A.M.C. (S.R.); Col. R. W. Clements, D.S.O.; Lt.-Col. (temp. Col.) H. Collinson, D.S.O., R.A.M.C.; Maj. (acting Lt.-Col.) P. Davidson, C.M.G., D.S.O., R.A.M.C.; Capt. K. K. Drury, M.C., R.A.M.C. (S.R.); Capt. T. I. Dunn, M.C., R.A.M.C. (S.R.); Temp. Capt. M. du B. Ferguson, R.A.M.C.; Lt.-Col. (temp. Col.) R. S. H. Fuhr, C.M.G., D.S.O., R.A.M.C.; Lt.-Col. (temp. Col.) J. S. Gallie, D.S.O., R.A.M.C.; Lt.-Col. and Bt. Col. (temp. Col.) T. W. Gibbard, K.H.S., R.A.M.C.; Temp. Capt. R. E. Gibson, R.A.M.C.; Lt.-Col. T. A. Granger, I.M.S.; Temp. Capt. S. S. Greaves, M.C., R.A.M.C.; Lt.-Col. (temp. Col.) J. Grech, D.S.O., R.A.M.C.; Capt. A. H. Heslop, D.S.O., R.A.M.C.; Lt.-Col. H. C. R. Hime, D.S.O., R.A.M.C.; Col. W. E. Hudleston, D.S.O.; Lt.-Col. (temp. Col.) L. Humphry, C.M.G., R.A.M.C.; Temp. Capt. H. G. Kilner, R.A.M.C.; Col. Sir W. B. Leishman, C.B., F.R.S., K.H.P.; Maj. (temp. Col.) C. H. Lindsay, C.M.G., R.A.M.C.; Capt. J. G. McCutcheon, R.A.M.C. (S.R.); Col. S. Macdonald, C.B., C.M.G.; Lt.-Col. and Bt. Col. A. J. Macnab, I.M.S.; Lt.-Col. J. F. Martin C.M.G.; Col. F. J. Morgan, C.M.G.; Lt.-Col. (temp. Col.) E. M. Morphew, D.S.O., R.A.M.C.; Col. D. M. O'Callaghan, C.M.G.; Surg.-Gen. M. W. O'Keeffe, C.B.; Lt.-Col. (temp. Col.) G. J. A. Ormsby, D.S.O., R.A.M.C.; Maj. (temp. Lt.-Col.) E. T. Potts, D.S.O., R.A.M.C.; Temp. Capt. G. Rankine, M.C., R.A.M.C.; Col. (temp. Surg.-Gen.) B. M. Skinner, C.B., C.M.G., M.V.O.; Capt. O. W. D. Steel, M.C., R.A.M.C.; Col. G. St. C. Thom, C.M.G.; Lt.-Col. (temp. Col.) A. G. Thompson, D.S.O., R.A.M.C.; Maj.-Gen. H. N. Thompson, C.B., C.M.G., D.S.O.; Capt. L. R. Tosswill, R.A.M.C., Maj. A. C. Turner, R.A.M.C.; Maj. (temp. Lt.-Col.) D. P. Watson, R.A.M.C.; Temp. Capt. R. H. G. Weston, R.A.M.C.

*Consultants.*—Maj. (temp. Lt.-Col.) H. A. Ballance; Temp. Surg.-Gen. Sir A. A. Bowlby, K.C.M.G., K.C.V.O.; Temp. Maj.-Gen. Sir J. R. Bradford, C.B., K.C.M.G., F.R.S.; Maj. R. H. Cooper, R.A.M.C.; Temp. Maj.-Gen. Sir B. E. Dawson, C.B., K.C.V.O.; Maj. (Temp. Col.) G. E. Gask, D.S.O.; Maj. (Temp. Col.) H. McI. W. Gray, C.B.; Col. E. M. Pilcher, D.S.O.; Temp. Col. O. W. Richards, D.S.O.; Temp. Col. T. Sinclair, C.B.; Lt.-Col. (temp. Col.) W. Thorburn, C.B.; Temp. Maj.-Gen. C. S. Wallace, C.M.G.; Capt. (Temp. Col.) A. E. Webb-Johnson, D.S.O.; Temp. Col. Sir A. E. Wright, C.B., F.R.S.

*Royal Army Medical Corps.*—Temp. Capt. J. Alexander; Temp. Capt. A. S. K. Anderson, D.S.O., M.C.; Temp. Capt. J. S. Arkle; Temp. Capt. C. C. Austen; Temp. Capt. T. B. Batchelor; Temp. Capt. W. C. Blackham; Temp. Capt. A. D. Blakeley; Capt. (acting Lt.-Col.) W. W. Boyce; Temp. Capt. C. F. Brady; Temp. Capt. G. M. Brown; Maj. (acting Lt.-Col.) C. G. Browne, D.S.O.; Temp. Hon. Lt.-Col. H. Cabot; Temp. Capt. J. P. Cahir; Temp. Capt. S. B. B. Campbell; Temp. Capt. T. H. Campbell; Temp. Capt. H. Caplan; Temp. Capt. F. F. Carr-Harris, D.S.O.; Temp. Capt. M. T. Cassidy; Temp. Capt. A. W. S. Christie; Temp. Lieut. J. S. Clark; Capt. (acting Lt. Col.) C. Clarke; Temp. Capt. C. J. W. Clayton; Maj. T. S. Coates; Temp. Capt. C. G. Colyer. Temp. Capt. J. A. Conway, M.C.; Maj. R. H. Cooper. Temp. Capt. G. M. Cowper; Temp. Capt. W. Crabtree; Temp. Capt. J. Crawford, M.C.; Temp. Capt. J. Cruickshank; Capt. (temp. Lt.-Col.) F. W. M. Cunningham; Maj. (acting Lt.-Col.) J. Dalrymple; Lt.-Col. C. G. Douglas, M.C.; Temp. Capt. (acting Lt.-Col.) R. E. Drake-Brockman; Lt. (temp. Capt.) C. R. Dudgeon, M.C.; Temp. Lt.-Col. (Lt.-Col., Aust. A.M.C.) W. L. E. Eames, C.B., V.D.; Temp. Capt. G. D. Eccles; Temp. Capt. J. A. Edmond; Temp. Capt. H. Emerson, M.C.; Temp. Capt. C. C. Forsyth; Temp. Capt. D. S. Graham; Temp. Capt. H. B. Graham, D.S.O.; Temp. Capt. A. Gray; Maj. (acting Lt.-Col.) G. D. Gray; Maj. (temp. Lt.-Col.) R. C. Hallowes; Lt.-Col. A. E. Hamerton, D.S.O.; Temp. Capt. C. Harris; Lt.-Col. (temp. Col.) J. A. Hartigan, D.S.O.; Maj. (temp. Lt.-Col.) T. E. Harty, D.S.O.; Maj. (temp. Lt.-Col.) W. J. S. Harvey, D.S.O.; Capt. (acting Lt.-Col.) R. Hemphill; Temp. Capt. F. W. Hird; Maj. J. E. Hoar; Temp. Capt. L. C. Johnson; Temp. Capt. (acting Lt.-Col.) A. Jones, M.C.; Temp. Capt. W. D. Kennedy; Temp. Hon. Maj. L. F. B. Knuthsen; Temp. Capt. P. J. Lane, M.C.; Temp. Capt. R. M. Lang; Temp. Capt. R. D. Lemon; Maj. (acting Lt.-Col.) R. P. Lewis; Temp. Capt. G. A. Lilly; Temp. Capt. S. J. L. Lindeman; Temp. Capt. W. H. Lister, D.S.O., M.C.; Temp. Capt. A. L. Lockwood, M.C.; Maj. J. L. Loudon; Temp. Capt. P. A. MacCallum; Temp. Capt. S. E. McClatchey; Temp. Capt. J. W. Macfarlane, M.C.; Temp. Capt. R. McGrath; Temp. Capt. R. A. MacNeill; Temp. Capt. A. C. B. McMurtrie; Temp. Capt. W. R. P. McNeight; Capt. (acting Lt.-Col.) A. N. R. McNeill; Temp. Lt.-Col. A. Martin-Leake, V.C.; Temp. Capt. A. F. Mavety; Temp. Capt. D. M. Morison; Temp. Capt. J. Morrison; Temp. Capt. H. H. P. Morton; Capt. W. P. Mulligan; Capt. W. G. Mumford; Maj. (acting Lt.-Col.) C. D. Myles; Temp. Capt. G. E. E. Nicholls; Capt. (acting Lt.-Col.) T. B. Nicholls; Temp. Hon. Capt. H. Nockolds; Capt. (acting Lt.-Col.) J. J. O'Keeffe, M.C.; Maj. (Temp. Lt.-Col.) A. C. Osburn, D.S.O.; Capt. E. Phillips, M.C.; Temp. Capt. F. E. L. Phillips; Temp. Capt. J. G. Pigott; Lt.-Col. J. Powell; Temp. Capt. J. A. Pringle; Temp. Capt. J. Proctor; Temp. Capt. (temp. Lt.-Col.) C. D. Pye-Smith, D.S.O., M.C.; Temp. Capt. C. R. Reckitt; Temp. Capt. G. W. Riddel; Temp. Capt. A. C. Rowswell; Capt. (acting Lt.-Col.) C. Scalfe; Temp. Capt. C. S. Scales; Temp. Capt. (acting Lt.-Col.) L. D. Shaw, D.S.O.; Maj. (acting Lt.-Col. H. C. Sidgwick; Maj. M. Sinclair; Major (acting Lt.-Col.) W. L. Steele; Temp. Lt.-Col. G. N. Stephen; Temp. Capt. D. S. Taylor;

Maj. (acting Lt.-Col.) C. H. Turner, D.S.O.; Temp. Capt. G. W. Twigg; Maj. (acting Lt.-Col.) T. B. Unwin; Capt. (acting Lt.-Col.) E. W. Wade, Temp. Capt. W. Warburton; Maj. (acting Lt.-Col.) W. J. Waters; Capt. W. L. Webster; Temp. Capt W. W. Wells; Temp. Capt. C. R. Whittaker; Temp. Capt. D. R. Williams; Temp. Capt. R. L. Williams, M.C.

*Royal Army Medical Corps (S.R.).*—Capt. W. R. Blore; Capt. C. F. Burton; Capt. W. B. Cathcart; Capt. E. M. Cowell; Capt. T. G. Fleming, M.C.; Capt. F. H. Goss; Capt R. A. Greenwood; Capt. (acting Lt.-Col.) C. J. A. Griffin; Capt. T. F. Hegerty; Capt. F. Jefferson; Capt J. I. Lawson; Capt. W. MeK. H. McCullagh, D.S.O., M.C.; Capt. (acting Lt.-Col.) S. Miller, M.C.; Capt. G. H. C. Mold; Capt. (acting Lt.-Col.) K. D. Murchison, D.S.O.; Capt. C. M. Page; Capt. (acting Lt.-Col.) A. T. Pitts; Capt. (acting Lt.-Col.) R. T. C. Robertson, D.S.O.; Capt. H. G. Thayer.

*Royal Army Medical Corps (T.F.)*—Capt. J. W. Anderson, M.C.; Capt. C. F. Backhouse; Maj. T. A. Barron; Maj. (temp. Lt.-Col.) E. B. Bird, D.S.O.; Capt. (acting Lt.-Col.) W. Blackwood; Temp. Capt. L. Blake; Capt. (temp. Lt.-Col.) J. Bruce; Capt. F. G. Caley; Maj. (acting Lt.-Col.) A. Callam; Capt. O. Cattlin; Capt. J. W. Dale; Capt. (acting Lt.-Col.) F. G. Dobson; Capt. (temp. Lt.-Col.) C. W. Eames; Lt.-Col. W. E. Foggie; Capt. and Bt. Maj. (temp. Lt.-Col.) C. H. S. Frankau; Capt. H. N. Goode; Capt. J. M. Hamill; Capt. T. R. Kenworthy, M.C.; Capt. G. C. King; Capt. G. H. Kirby; Capt. (temp. Maj.) S. Knight; Capt. (acting Lt.-Col.) C. L. Lander, M.C.; Capt. (acting Lt.-Col.) H. B. Low, M.C.; Capt. (acting Lt.-Col.) G. Mackie, D.S.O.; Capt. (acting Lt.-Col.) J. MacMillan, M.C.; Capt. S. A. S. Malkin; Capt. A. C. Mallace; Maj. (temp. Lt.-Col.) J. Nightingale; Capt. R. P. Pollard; Capt. H. H. Robinson, M.C.; Capt. F. E. W. Rogers; Capt. S. Scott; Capt. J. M. Smith; Maj (temp. Lt.-Col.) C. A. A. Stidston, D.S.O.; Capt. W. Stobie; Maj. (temp. Lt.-Col.) W. G. Sutcliffe; Capt. A. C. Watkin; Capt. (acting Lt.-Col.) A. J. Williamson; Maj. (temp. Lt.-Col.) P. G. Williamson, M.C.

*American Medical Corps.*—Temp. Hon. Maj. V. H. Kazanjian, Harvard Gen. Hosp.

## THE CALLING-UP OF MEDICAL MEN.

Instructions have now been issued by the Local Government Board for England and the Secretary for Scotland, known as the Military Service (Medical Practitioners) Regulations, 1918, dealing with applications for exemption (R. 197. Price 1*d*. H.M. Stationery Office). These came into operation on May 23rd.

1. *Special tribunal.*—The regulations provide for the recognition as a special medical tribunal of the bodies which have already long been dealing with all applications concerning medical practitioners. Applications may be referred by this tribunal to the local professional committees, which will act as the agents of the tribunal and report, the decision in each case resting with the tribunal itself. As in the past, applications concerning members of the staffs of the London hospitals are to be referred to the Committee of Reference, whose recommendation will be binding on the tribunal.

2. *Practitioners for whom application may be made.*—Any medical practitioner now liable to military service, including those enrolled and voluntarily attested, may apply for exemption with the following general exceptions:—

Application may not be made concerning a practitioner whose case has been under consideration by the recognised bodies since March 1st last, and who has been refused exemption or has been recommended for a commission in the R.A.M.C.

As regards any practitioner who now holds an exemption, an application may be made only for the renewal or variation of the certificate.

If an application is made on behalf of a medical practitioner he must join in the application and sign the form.

3. *Time for applications.*—When the circumstances of each area are under review, notification will be sent by the Minister of National Service to each practitioner affected, informing him of the time within which he may apply. A written application may be delivered to the Medical Tribunal not earlier than the day on which the notification is sent to the practitioner and not later than the fourteenth day after it is sent Forms are provided for that purpose by the Medical Tribunal, the Committee of Reference, and the Local Professional Committees.

4. *Renewals.*—An application for the renewal of a certificate of exemption may be made only with the leave of the Medical Tribunal or the Committee of Reference, as the case may be, unless the previous certificate was granted by a Government Department.

5. *Hearing.*—The Medical Tribunal and the Committee of Reference must give the applicant an opportunity of being heard in each case, unless they are prepared, in agreement with the Ministry of National Service, to grant the application without a hearing. If the case is referred to a local committee, the Medical Tribunal may also direct that the local committee shall give the applicant an opportunity of being heard by the committee before they make their report.

6. *Appeal.*—An appeal may be allowed to the Central Tribunal from the decision of the Medical Tribunal or the Committee of Reference on grounds of serious hardship, of ill-health or infirmity, or of conscientious objection. The Medical Tribunal and the Committee of Reference are in the position of appeal tribunals, and, in deciding whether to grant or to refuse leave, follow the indications issued to appeal tribunals—namely, that "it is not intended that cases shall come before the Central Tribunal unless important questions of principle are involved or unless there is some other special reason why the appeal should be allowed."

7. *Nature of exemption.*—Any exemption on the ground of occupation or on personal grounds may be subject to the condition that the practitioner shall undertake such professional service and under such conditions as the Director-General of National Service may deem best in the national interests.

The circular issued to the professional committees and to the Central Tribunal lays stress again on the fact that the medical profession is in a special position, adding:—

The demand for medical practitioners for military and civilian service is so great that it is only by a carefully considered distribution of the available medical men that the requirements of the country can be met. This has been recognised by the medical profession itself in resolutions passed by their representatives. It is because of this special position of the medical profession that the provision referred to above has been made, and it is because of this special position also that the profession is granted a special tribunal drawn from its own members.

The regulation in question will be administered with the utmost consideration consistently with the national interests, and any arrangements under it will be made in full consultation with the Medical Tribunal.

Under the recent Military Service Act any man now exempted by a tribunal becomes liable to serve in the volunteer force unless the tribunal otherwise directs. A practitioner who considers that he should be free from this condition should therefore put his claim for release from this condition before the tribunal.

8. *Pending cases.*—As regards applications to tribunals pending at the time these regulations came into force, the cases already referred to the professional committees will be decided by them if a recommendation has already been made. Otherwise the case is to be referred to the Medical Tribunal as if it were a new application.

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AFTER-CARE OF DISABLED SOLDIERS AND SAILORS.—The admirable exhibition held last week in connexion with the Inter-allied Conference at Westminster is being reopened to-day (Saturday), at 12 noon, at the Memorial Hall, Farringdon-street, and will remain open for a fortnight from 10 A.M. to 7 P.M. Medical men will welcome the further opportunity thus afforded of studying at first hand a museum of ingenious appliances.

THE ELSIE INGLIS UNIT OF THE SCOTTISH WOMEN'S HOSPITALS.—This unit, which left London at the end of February, after inspection by the King and Queen, reached its destination on the Macedonian front on April 1st, and by enthusiastic work made the camp which, with its tent-wards, laundry, kitchens, incinerator, and careful sanitation, was ready for the reception of patients a fortnight later. The Jugoslav Division of the Serbian Army, to which the Elsie Inglis Unit is attached as sole field hospital, has been in severe fighting since then, and the wards are now filled with sick and wounded brought straight from the front. The Hospital has its own transport and the girl drivers make daily rounds with the motor-ambulances to fetch in the cases.

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ORDER OF THE BRITISH EMPIRE.—Miss Edith H. Barrett, O.B.E., honorary secretary to the Australian Branch of the British Red Cross Society, has been promoted to a C.B.E.

ACADEMIC HONOUR FOR MAJOR HARVEY CUSHING.—The Royal College of Surgeons in Ireland met, on May 25th, under the presidency of Colonel William Taylor, and in the presence of Lord French, Lord Lieutenant, and a distinguished assembly, to confer the honorary Fellowship of the College on Major Harvey Cushing, professor of surgery in Harvard University, and now of the United States Army. Mr. J. B. Story, Vice-President, presented Major Cushing to the President, giving a short sketch of his career. Major Cushing was then admitted a Fellow, and, having signed the roll, returned thanks to the College. The College is very chary of electing honorary Fellows, and in its whole history has only admitted some threescore. It has been singularly happy in its latest choice, as Major Cushing, by his professional eminence, will bring credit to his adopted College, while his election is a compliment to the service of which he is so good a representative. For the past 12 months our troops in France have been so fortunate as to have his skill at their service. Major Cushing is already an honorary Fellow of the Royal College of Surgeons of England.

# THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

### SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending May 25th :—

| | £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Dr. W. Maxwell Penny | 2 | 0 | 0 | Dr. J. A. Macdonald (Taunton) ... ... ... | 5 | 5 | 0 |
| Dr. John A. Macdonald | 1 | 1 | 0 | Sir Francis Champneys | 5 | 0 | 0 |
| Dr. J. J. Perkins ... ... | 3 | 3 | 0 | Dr. C. Legg ... ... ... | 0 | 10 | 6 |
| The Viscount Iveagh, K.P. (per Sir Rickman Godlee) ... ... ... ... | 25 | 0 | 0 | R. H. W. ... ... ... ... | 20 | 0 | 0 |
| | | | | Dr. Evan Jones ... ... | 0 | 10 | 6 |

**Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A Des Vœux, at 14, Buckingham Gate, London, S W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.**

# THE SERVICES.

## ROYAL NAVAL MEDICAL SERVICE.

### ROYAL NAVAL VOLUNTEER RESERVE.

W. A. H. Saul to be temporary Dental Surgeon.

## ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. R. H. Hall is placed on retired pay.

Temporary Lieutenant-Colonels, Canadian A.M.C., to be temporary Colonels: H. R Casgrain, J. Stewart.

Major F. D. G. Howell to be temporary Lieutenant-Colonel whilst employed as Assistant Director of Medical Services of an Army.

Major G. E. Ferguson to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Temp. Major J. L. Birley to be acting Lieutenant-Colonel whilst specially employed.

Temporary Majors to be temporary Lieutenant-Colonels: Sir R. Armstrong-Jones, H C. Marr.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Capt. C. H. Stringer, Capt. G. G. Collet. Lieut. (temp. Capt.) R. W. Galloway, Capt. L. T. Poole, Major S. B. Smith.

To be acting Lieutenant-Colonels whilst specially employed: Major T. J. Potter, Temp Capt. (temp. Major) F. G. W. Deane, Temp. Major (Capt., R.A.M.C., T.F.) L. C. Bruce, Temp. Major (Capt., R.A.M.C., T.F.) C. S. Young, Temp. Capt P. Steele.

Temp. Hon. Major T. E. K. Stansfield to be temporary Honorary Lieutenant-Colonel.

Temp. Hon. Major W. J. Richard to be temporary Honorary Lieutenant-Colonel whilst employed at the Merryflats War Hospital.

Temp. Major J. J. G. Blandford to be temporary Lieutenant-Colonel.

Temp. Capt. P. J. A. Seccombe to be temporary Major whilst commanding Troops on a Hospital Ship.

To be acting Majors whilst specially employed: Capts. J. W. Houston, J. E. G. Thomson, F. G. Prestwich, H. A. Macmillan, F. Metcalfe, H. D. Clementi-Smith, J. A. Young, C. H Caldicott, W. Brander, A. Griffith, W. F. Young, W. B. Hill, G. Young, Bt. Major R. C. Elmslie, S. G. Webb, A. G. Kewley, G. H. Cowen, W. L Griffiths, A. R. Paterson, A. Ricketts, T. H. Richmond, A. Cambell, J. H. Crane, W. R. Bristow; Lieut. (temp. Capt.) O. B. Pratt; Temp. Capts. J. Taylor, A. J. H. Boyton, R. Edwards, H. F. Sheldon, G. Marshall, J. O'D. Egan, W. F. Law, D. J. Glen, J. P. Duncan, W. M. Buchanan, D. Fletcher P. H. Macdonald, J. W. Bennett, D. W. Torrance, J. Philp, J. Porter, A. Abrahams, J. T. McCullagh, W. E. P. Phillips, A. C. E. Gray, A. H. M. Robertson, R. M. Fenn, D. F. O'Kelly, J. E. Power; Lieut. D. Burrows.

To be acting Majors: Temp. Capts. D. B Pascall, N. A. A. Hughes, A. C. Hancock, R. Tindall, W. Kennedy-Taylor, and H. J. de Brent; Capt. C. T. Edmunds; Temp. Lieut. D. C. Ogilvie.

Captains (acting Majors) relinquishing their acting rank on ceasing to be specially employed: F. G. Prestwich, H. P. Malcolm, R. G. Badenock.

Capt. G. H. Spencer to be acting Lieutenant-Colonel whilst commanding a Military Hospital.

G. Morris and G N. B. Sebastian (late temporary Captains) and A. Cameron are granted the honorary rank of Captain.

J. Beckett to be temporary Honorary Captain while serving with St. John Ambulance Brigade Hospital.

Lieutenants (temporary Captains) to be Captains: K. A. M. Tomory, J. S Sloper, C. Wilson H. N. Stafford, R. J. Sullivan, R. A. Anderson, F. M. Lipscomb, H P. Rudolf, D. N. Macleod.

Temporary Lieutenants to be temporary Captains: A. Bryans, P. S. Clarke, T. N. Darling, J. E Mitchell, R. Beesley, H. G. Sparrow C. E. Evans, C. S. Stolterfoth, T. Foode, G. V. Fiddian, P. M. Reid. R. H. S. Tornev, A. G. Wilson, M. Horan, W. St. J. Cogan, J. C. D. Allan, S. McMurray, J. A. Wood, H. A. Cecil.

Late temporary Lieutenants granted the honorary rank of Lieutenants: P. Hall, C. A. Purnell.

Officers relinquishing their commissions: Temp. Major T. B. Rhodes (on ceasing to be employed with the N. Staff. Infirmary), Temp Capt. (acting Major) G. W. Parry, Capt. W. W. Horton (on account of ill-health and is granted the honorary rank of Captain). Temp. Capts. M. McK. McRae, S. J. A. Beale, J. S. E. Selby, W. Carnes, W. C. Blackham, S. F. Lusk, E. A. Morgan, G. F. Nelson, R. P. Williams, F. J. Colling, G. Stewart, A. A. Hill, F. W. S. Stone, J. V. Watson. E. H. Montgomery, A. E. J. Barcroft, C. A. Verge, Temp. Capt. F. S. Campbell (on taking up duty under the Ministry of National Service), C. D. Goodenough, W. T. Evans, W. L. Christie; Temp. Hon. Capt. W R. Carter (on ceasing to be employed with British Red Cross Society in France); Temp. Lieuts. W. Robertson, F. R. Sinton. H. B. Corry, G B. Scott, A. J. M. Paget, R. Butterworth, F. J. Willans, A. A. Bisset, A. H. G MacKintosh, C. P. Beevor (on account of ill-health contracted on active service, and is granted the honorary rank of Lieutenant); Temp. Hon. Lieut. J. W. Hawthorne.

### ROYAL AIR FORCE (MEDICAL BRANCH).

H. C T. Langdon (temporary Major, R.A.M.C.) is granted a temporary commission as Major, and to be temporary Lieutenant-Colonel whilst employed as Lieutenant-Colonel (Med.).

A. H. Cheatle is granted a temporary commission as Major, and to be temporary honorary Lieutenant Colonel while holding present appointment as temporary honorary Lieutenant-Colonel (Med.).

F. F. Muecke (temporary Major, R.A.M.C.) is granted a temporary commission as Major, and to be temporary Lieutenant-Colonel whilst employed as Lieutenant-Colonel (Med.).

R. P. Williams (temporary Captain, R.A.M.C.) is granted a temporary commission as Captain, and to be temporary Lieutenant-Colonel whilst employed as Lieutenant Colonel (Med.).

H. Pritchard (temporary honorary Major, R.A.M.C.) is granted a temporary commission as honorary Major.

M. W. Flack (temporary honorary Major, R.A.M.C.) is granted a temporary commission as honorary Major and to be temporary honorary Lieutenant-Colonel whilst employed as temporary honorary Lieutenant-Colonel (Med.).

The under-mentioned are granted temporary commissions as Captains, and to be temporary Majors whilst employed as Majors (Med): A. P. Bowdler (temporary Captain, R.A.M.C.), J. McIntyre (temporary Captain, R.A.M.C.).

Lieut. G. G. Fairbairn to be an Administrative Officer from Observer, and to be temporary Captain whilst so employed.

### SPECIAL RESERVE OF OFFICERS.

The undermentioned Captains to be acting Lieutenant-Colonels whilst in command of a Medical Unit: A. T. Pitts, C. J. A. Griffin.

Captains to be acting Majors: J. R. N. Warburton, R. A. Hepple, S. Wickenden, F. Gamm, A. R. Dale, and W. A. Thompson and M. W. Ruthven (whilst specially employed).

Lieutenants to be Captains: C. E. Hopwood, H. D. McIlroy, R. R. Longstaff, W. Andrew, G. A. Harrison, E. A. C. Langton, K. N. G. Bailey, A. R. Dingley, W. G. Verniquet, W. C. Mackinnon, C. V. Pearson, P. B Pinkerton, J. D. Johnson, J. Allison, J. B. Hanna, W. McElroy, R. B. Smith, J. Aitken, J. L. Hill, J. M. Martin, J. H. Neill F. J. Jack, H. Patlansky, F. W. Hebblethwaite, H. F. Hollis, C. L. Somerville, J. W. W Baillie, A. McA. Blackwood, J. MacD. Clark, A. Dick, J. E. R. Holms, W H. Kerr, J. Liddell, F. C. Logan, K. McAlpine, A. D. C. McGowan, D. W. M. MacKenzie, W. D. Miller, W. H. Palmer, J. W. Patterson, H. B. Sergeant, A. W. Smith, R. Wiggins, R. R. Garden, A. C. Irvine, W. W. Nicol, R. Thom, J. H. Davison, H. W. Lewis, R. Nixon, E. Bramley, J. M. Morrison, L C. Rudd, D. Lennox, E. S. Stubbs, C. Shearer, S. N. Dykes, A. J. B. Griffin.

To be Lieutenants: Second Lieut. J. D'A. Champney (from Unattached List, T.F.); J. H. Tighe (from Birmingham University Contingent, O.T.C.); G. M. S. Smith (from Edinburgh University Contingent, O.T.C.); W. A. Jackson, G. A. Mitchell (from Manchester University Contingent, O.T.C.); A. E. Cochrane, W. S. L. McLeish, J. Nicolson, J. J. Treanor, W. A. Walker (from Glasgow University Contingent, O.T.C.); N. E. Barnewell Keogh (from Bristol University Contingent, O.T.C.); J Gilmour (from Durham University Contingent, O.T.C.); D. Macqueen, V. J. Perez, G. H. Gidlow-Jackson, D. Taylor.

### TERRITORIAL FORCE.

Major E. G. Peck, D.S.O., to be acting Lieutenant-Colonel whilst commanding a Stationary Hospital.

Major J. H. Stephen to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. S. R. Gibbs to be acting Major whilst specially employed.

Capt. (acting Lieutenant-Colonel) R. Warehouse reverts to the temporary rank of Major on alteration in posting due to reorganisation.

Capt. B. E. Potter to be acting Major whilst specially employed.

Capt. W. B. Abinger is seconded for duty overseas.

Capt. (acting Major) T. H. W. Alexander relinquishes his acting rank on vacating special appointment.

Capts. A. Ellison, J. R. Riddell, and T. H. W. Alexander are restored to the establishment.

The under-mentioned Captains to be acting Majors whilst specially employed: C. D S. Agassiz, J. S. Ward, A. E. Huxtable, F. B. W. Rogers, A. J. Blaxland, A. C. Pearson, J. Graham, C. J. Fox, A. C. Watkin, K. D. Wilkinson, W. T. P. Meade-King, J. H. P. Fraser, T. W. Hancock, J. H Thomas.

Capt. (Brevet Major) C. N. Draycott relinquishes his commission on account of ill-health and retains the brevet rank of Major.

Capt. (acting Major) H. Seddon to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. (acting Lieutenant-Colonel) R. S. Taylor reverts to the temporary rank of Major on ceasing to command a Field Ambulance.

Lieut.-Col. (Brevet Col.) A. B. Gemmel and Major E. N. Cunliffe are restored to the establishment.

Capt. J. L. Wilson relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

### TERRITORIAL FORCE RESERVE.

Capt. A. Richardson seconded for service overseas.

Capt. C. R. Roch, from the Yeomanry, to be Captain.

Capt. T. Carnwath, from R.A.M.C., to be Captain.

Capt. W. C. Stewart relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

### TERRITORIAL DECORATION.

The Territorial Decoration has been conferred upon the undermentioned officers: Lieut.-Col. W. K. Clayton, Major R. Emmett, Major T. L Fennell, Major A. Fowler, Major A. Butler, Lieut.-Col. T. Frankish, Lieut.-Col. J. Oldfield, Major G. W. Miller, D.S.O., Lieut.-Col. A. M. McIntosh, Lieut.-Col. W. A. Benson, D.S.O., Lieut.-Col. J. P. Bush, C.M.G.

## INDIAN MEDICAL SERVICE.

The King has approved the retirement of, and the grant of honorary rank to, Surg.-Gen. T. Grainger, C.B., in consequence of ill-health.

Lieut.-Col. H. Burden to be temporary Colonel whilst employed as Assistant Director of Medical Services.

Captains to be Majors: H W. Pierpoint, W. D. H. Stevenson, H. P. Cook, W. J. Fraser, C. A. Godson, R. H. Lee, W. A. Mearns, W. B. A. K. Cullen.

# Medical News.

LITERARY INTELLIGENCE.—Two addresses by Sir William Osler, the one on Science and Immortality, delivered at Harvard University in 1904, the other, entitled "A Way of Life," delivered to Yale students in 1918, have been reprinted in attractive form by Messrs. Constable and Co., and issued at 7*d*. each.

PRESENTATION TO A MEDICAL MAN.—Mr. E. F. H. Burroughs, of Redland, Bristol, has been recently presented with a purse of money in appreciation of his services as surgeon to the Shepherds Friendly Society for the past 26 years.

ROYAL VICTORIA HOSPITAL, BELFAST.—Saturday, May 25th, was the occasion of the annual street and house-to-house collection for the above charity. Unfortunately, it was very wet, but, notwithstanding, excellent results were obtained. The aim of the Collection Committee is to raise £2500, a sum required to meet the increased expenditure due to the war.

TEHIDY SANATORIUM FOR TUBERCULOSIS.—This sanatorium has now been formally handed over to the Cornwall County Council as the war memorial for the county. The amount at present raised for the purpose of the scheme is £16,000, and as the fund will not be closed until July 31st it is hoped that the extra £1000 which is still required will be obtained.

MEDICAL OFFICER APPOINTED DIRECTOR OF EDUCATION AT ZANZIBAR.—Dr. Alfred Henry Spurrier, C.M.G., Physician-in-Extraordinary to H.M. the Sultan of Zanzibar, and medical superintendent of Prison Island Sanitary Station, has been appointed Acting Director of Education for Zanzibar. Dr. Spurrier has been editor of the *Zanzibar Government Gazette* since 1895, and is well known in the island and in East Africa generally, where he has been for many years principal medical officer, and the good health of the port and island to-day is largely due to his ability and energy. He has an extensive knowledge of the educational needs of the very varied community of Zanzibar.

MEDICAL WOMEN'S FEDERATION.—The Medical Women's Federation held its first annual general meeting in London on May 25th. Dr. Jane Walker, the president, was in the chair, and the meeting was largely attended by members from all parts of Great Britain. It was unanimously resolved that Regulation 40 D under the Defence of the Realm Act, making it an offence for any woman suffering from venereal disease to solicit, or to have sexual intercourse, with a member of His Majesty's Forces, ought to be immediately withdrawn. A special committee was appointed to consider and report upon the matter in all its bearings affecting the Army, the Navy, foreign troops, and the civil population, and to prepare a constructive policy and lay its recommendations before the Federation. The status of medical women employed in military hospitals under the War Office was discussed. It was felt that these women were in an impossible position. Through having no military rank they were serving under a serious disability, involving loss of professional standing. It was unanimously agreed that the Federation should take every means in its power to press for temporary rank for medical women in the military hospitals on the lines of the Territorial R.A.M.C. A draft scheme of maternity and child welfare had been drawn up. It was proposed to submit this scheme to a special committee, but the meeting was in favour of postponing the preparation of the final draft until the question of a Ministry of Health was settled. A statement was made by Dr. Mary Bell, the Federation representative on the Central Medical War Committee, inviting the Federation to nominate three or four representatives to discuss with the executive subcommittee of the Central Committee in what way the services of medical women could best be used to take the place of medical men called up under the new Military Service Act.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on May 14th, 18 cases were considered and £188 voted to 16 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 63, of F.R.C.S. Edin. who practised at Tintern and Balham and died in 1914. Since the death of her husband, who left her unprovided for, she has managed to get along by taking resident patients, but owing to ill-health unable to continue this work. Voted £10.—Widow, aged 50, of M.R.C.S. Eng. who practised at Bagshot, Surrey, and India, and died in 1916. Unable to work owing to ill-health. Has three children, ages 12-14, but none able to help. Income about £100 a year from friends and relations. Rent £36. Voted £10 in two instalments.—Widow, aged 50, of L.R.C.P. Edin. who practised at Jamaica and died in 1891. Was left with three daughters and without means. Only permanent income now £20 a year from the Hospital for Incurables. Used to earn a little by taking care of a young girl who has recently died. Relieved nine times, £108. Voted £12 in 12 instalments.—Daughter, aged 62, of L.S.A. Lond. who practised at Cheadle and died in 1874. Only income £25 a year from friends and about £5 from sewing. Pays 4*s*. 9*d*. a week rent. Relieved 12 times, £115. Voted £15 in 12 instalments.—Daughter, aged 48, of M.D. Dub. who practised at Douglas and died in 1882. Has suffered for many years from arthritis and is unable to work. Friends allow £40 a year, and she has £7 10*s*. from investments. Relieved three times, £12. Voted £5.—Widow, aged 62, of L.R.C.P. & S. Edin. who practised at Wigan and died in 1913. Endeavours to earn a living by taking in boarders. Her son, who used to help to support the home, has had to join the Army, and applicant only receives 9*s*. 3*d*. allowance. Increased cost of living makes it difficult for her to manage. Relieved once, £10. Voted £12.—Daughter, aged 70, of M.R.C.S. Eng. who practised at Cranbrook and died in 1890. Applicant unable to work. Income from other benevolent societies and other sources about £50. Has to pay £1 a week for board and lodging. Relieved 19 times, £204. Voted £12 in 12 instalments.—Widow, aged 73, of M.R.C.S. Eng. who practised at Liverpool and died in 1887. Used to keep house for her son, who was a medical man and who died from overwork in the early days of the war. Lives in own house, which is mortgaged, and rates and interest cost £28 a year. Widowed daughter lives with her. Has a paying guest, but cannot make sufficient to meet expenses. Relieved twice, £20. Voted £15.—Widow, aged 44, of L.R.C.P. & S. Dub. who practised at Melbourne and died in 1903. Was left entirely without means, and before the war was able to earn her living by teaching languages. At present urgently in need of assistance financially. Relieved twice, £22. Voted £10.—Daughter, aged 63, of M.R.C.S. Eng. who practised in London and other places and died when applicant was a child. Owing to a serious accident in 1916 applicant can only get about with the aid of crutches and is quite unable to work. Lives with relations who cannot afford to keep her. Relieved four times, £22. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W.1.

Lieutenant-Colonel Charles Brook, late R.A.M.C. (T.F.), has been appointed honorary consulting surgeon to the 4th Northern General Hospital, Lincoln, as a recognition of long service.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

*Exchange of Prisoners.*

IT was announced in both Houses of Parliament on Tuesday, May 28th, that negotiations were about to be entered upon for the exchange of prisoners with Germany on lines which, broadly speaking, followed the lines of the Franco-German agreement. Civilian as well as military prisoners would be included in the scope of the negotiations.

## HOUSE OF COMMONS.

TUESDAY, MAY 28TH.

*Registrars of Military Hospitals.*

Major D. DAVIES asked the Under Secretary for War whether he could take steps, in order to utilise the services of doctors in the Royal Army Medical Corps to the fullest extent, to appoint officers other than Royal Army Medical Corps officers who had been declared unfit for general service as registrars of military hospitals and convalescent establishments.—Mr. MACPHERSON replied: The duties of registrars of military hospitals include those of a purely professional nature, and it is not considered that such posts could be efficiently filled by officers other than those in the Royal Army Medical Corps.

*Pensions Administration.*

Mr. HODGE (Minister of Pensions), in the course of a statement in Committee of Supply, said that, so far as restoration was concerned, he very quickly came to the conclusion, after he became Pensions Minister, that it required an expert for an expert's job. He did not profess to know very much about surgery or medicine, but he flattered himself that he knew quite as much about these two topics as any civil servant who at that moment was in charge of that particular department. As a consequence they started a medical service department with an eminent doctor in charge, and it was an undoubted fact that since that doctor took office and had his staff completed the developments in that direction had been exceedingly great. Instead of orthopædic treatment in two or three centres they had decentralised it, and hoped by and by to have in every town of any size an orthopædic clinic where even men who had obtained employment could, as time and opportunity appealed to them, have treatment in these institutions. His belief was that the more they took to the door of the man those facilities the more would the individual avail himself of the opportunities.

He thought it was due to our great physicians and surgeons to say how much the Ministry of Pensions was indebted to them for the disinterested and voluntary services they had rendered to the Ministry not only so far as orthopædics was concerned, but also so far as those diseases which came more under the notice of physicians were concerned. A difficulty which cropped up was in regard to artificial legs and arms and hands. It appeared to him that if they were to do the best possible for the disabled men it was absolutely essential that a new department should be established. To that task he set his hand, and he further considered that it was absolutely essential that they should have an experimental laboratory, so that all so-called new inventions should be exploited for the benefit of the disabled. They had discovered as they had gone on that with the Ministry of Munitions they could work in coöperation to their mutual advantage in seeking to develop any idea which was presented to them so far as the improvement of artificial limbs was concerned. During the last few months there had been a great development in that direction, and they were still taking advantage of any device that was submitted to them for approval, of examining carefully into it as to whether it could be made useful or not. While a long waiting list had accumulated for artificial limbs, he was hopeful that in the course of a very short time they would be able, not only to overcome arrears, but to provide every disabled soldier with a spare artificial limb. They had greater difficulties with respect to artificial hands and arms than with regard to legs. At the present moment orthopædic surgeons were experimenting in this fashion. They were desirous of, if possible, preventing the men using crutches, and so soon as the stump was healed they desired to give them what was commonly known as a peg-leg, so that they might learn the art of balancing. It was interesting to note that the experiment had proved a very great success.

*Hospital accommodation.*—With respect to hospital accommodation they were always dependent upon other Government departments for aiding and assisting them. He would dearly love to have the right to commandeer. He thought if he had, a good many delays would be avoided. Up to the end of April the number of disabled men who had received pensions was 341,025. He had taken the trouble to work out percentages of certain injuries. They had never been worked out till now. They included officers and men of the Army, and officers, warrant officers, and petty officers of the Navy, and were as follows: Eyesight cases, 2·8 per cent. of the whole; wounds and injuries to legs necessitating amputation, 2·6; wounds and injuries to arms necessitating amputation, 1·40; wounds and injuries to legs not necessitating amputation, 11·9; wounds and injuries to arms not necessitating amputation, 8·45; wounds and injuries to hands not necessitating amputation, 4·45; wounds and injuries to head, 4·0; hernia, 0·8; miscellaneous wounds and injuries, 5·55; chest complaints and tuberculosis, 11·60; rheumatism, 6·5; heart disease, 10·3; epilepsy, just over 1 per cent.; nervous diseases, shell shock, neurasthenia, and miscellaneous nervous disorders, just under 6 per cent.; insanity, 0·75; deafness, 2 per cent.; frost bite, including cases of amputation of feet or legs, 0·9; miscellaneous diseases, such as Bright's disease, debility, ulcer of the stomach, varicocele, enteric, malaria, spinal, appendicitis, and various other diseases, 18·36. These indicated the nature of the casualties, and when he compared them with the returns for a month he found the percentages worked out very similarly to those which covered the whole period. Another reform they accomplished was the setting up of medical referees all over the country. Continuously they were receiving complaints from men that they were under-assessed, and it appealed to him that it was absolutely essential that they should have medical referees so that a man might have an opportunity of going before a local doctor of repute. While they had a very excellent system of general practitioner treatment for disabled men in this country, they had nothing of the kind in Ireland, and recently they had an inquiry made, and they had been selecting medical referees in Ireland for the same purpose. In addition, they were making provision for general practitioner treatment for disabled men in Ireland, so that they might have exactly the same facilities as in England, Scotland, or Wales. There was a controversy raging over the fact that he had indicated his intention of closing Golders Green so far as neurasthenic patients were concerned. That decision was not come to without consulting experts. One lot of neurological experts said it was quite all right; the men suffered nothing from air raids. The others said they did suffer and suffer badly. That was where the men of common-sense came in. He had decided, in the belief that he possessed ordinary common-sense, that Golders Green was not a place for shell-shock patients. His desire was to use Golders Green for another class of patient who would not experience the same injurious effects from an air-raid bombardment as shell-shock patients did. He regretted that there should be any controversy upon the subject. In coming to the decision he did he had no axe to grind. He had no other ambition than the benefit of the shell-shock patient.

After considerable debate Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Ministry of Pensions) also defended the decision not to treat shell-shock patients at Golders Green. They were now treating them at Maidenhead outside the air-raid area. There were also homes at Manchester, Leicester, Dublin, Belfast, and Edinburgh, and others were being prepared in Liverpool and Leeds. Full provision had been made to treat the poor fellows who were suffering from shell shock. As to the treatment of soldiers suffering from tuberculosis in sanatoria, that was a matter for the Insurance Committees. But the Ministry had made a grant in order that these discharged soldiers might obtain priority of treatment. He did not think that the provision of sanatoriums was sufficient for the cases that had to be dealt with, but that did not lie within the scope of duties of the Ministry.

## URBAN VITAL STATISTICS.

**(Week ended May 18th, 1918.)**

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civilian population estimated at 16,500,000 persons, the annual rate of mortality was 14·3, against 14·7 and 15·0 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 13·3, or 1·4 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 4·9 in Oxford, 6·2 in Acton, and 6·7 in Smethwick, to 23·9 in Sunderland, 25·2 in Great Yarmouth and in West Hartlepool, and 29·4 in Barnsley. The principal epidemic diseases caused 448 deaths, which corresponded to an annual rate of 1·4 per 1000, and included 201 from measles, 152 from whooping-cough, 38 from diphtheria, 38 from infantile diarrhœa, 11 from scarlet fever, and 8 from enteric fever. Measles caused a death-rate of 3·8 in Hull, 4·6 in Stockton-on-Tees, 5·9 in West Hartlepool, 9·8 in Wakefield, and 10·9 in Barnsley; and whooping-cough of 1·5 in South Shields, 1·8 in Walsall, 2·5 in West Hartlepool, 3·0 in Warrington, and 4·2 in Merthyr Tydfil. The 834 cases of scarlet fever and 1273 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 2 above and 49 below the respective numbers remaining at the end of the previous week; there were also 8 cases of small-pox remaining, but no new case was admitted during the week. Of the total deaths in the 96 towns 131 resulted from violence. The causes of 28 deaths were uncertified, of which 5 were registered in Liverpool, 5 in Sunderland, and 3 in Birmingham.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 17·0, against 14·4 and 15·6 per 1000 in the two preceding weeks. The 423 deaths in Glasgow corresponded to an annual rate of 19·8 per 1000, and included 33 from measles, 21 from whooping-cough, 3 from infantile diarrhœa, 2 from scarlet fever, and 1 from diphtheria. The 84 deaths in Edinburgh were equal to a rate of 13·1 per 1000, and included 3 from diphtheria, and a fatal case each of scarlet fever, whooping-cough, and infantile diarrhœa.

*Irish Towns.*—The 155 deaths in Dublin corresponded to an annual rate of 20·3, or 1·1 per 1000 below that recorded in the previous week, and included 6 from whooping-cough, 3 from measles, and 1 each from enteric fever and scarlet fever. The 133 deaths in Belfast were equal to a rate of 17·6 per 1000, and included 3 from whooping-cough and a fatal case each of enteric fever, scarlet fever, diphtheria, and infantile diarrhœa.

**(Week ended May 25th, 1918.)**

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 13·7, against 15·0 and 14·3 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 13·4, or 0·1 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 3·8 in Northampton, 5·3 in Bath, and 5·8 in Eastbourne, to 24·3 in Sunderland, 24·4 in Aberdare, and 40·2 in Barnsley. The principal epidemic diseases caused 413 deaths, which corresponded to an annual rate of 1·3 per 1000, and included 190 from measles, 135 from whooping-cough, 37 from infantile diarrhœa, 36 from diphtheria, 9 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 2·3 in Bradford, 2·7 in Stockton-on-Tees, 2·9 in Sunderland, 4·7 in Hull, 12·0 in Wakefield, and 19·6 in Barnsley; and whooping-cough of 2·3 in Warrington and 2·4 in South Shields. The 799 cases of scarlet fever and 1257 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 35 and 16 below the respective numbers remaining at the end of the previous week; there were also 5 cases of small-pox remaining under treatment, but for the second consecutive week no new case was admitted. Of the total deaths in the 96 towns 161 resulted from violence. The causes of 39 deaths were uncertified, of which 6 were registered in Birmingham, and 3 each in London, East Ham, Southend-on-Sea, Liverpool, and South Shields.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 15·5, against 15·6 and 17·0 per 1000 in the two preceding weeks. The 381 deaths in Glasgow corresponded to an annual rate of 17·8 per 1000, and included 24 from measles, 10 from whooping-cough, 4 from typhus, 3 from infantile diarrhœa, 2 from diphtheria, and 1 from enteric fever. The 72 deaths in Edinburgh were equal to a rate of 11·3 per 1000; no fatal case from any of the principal epidemic diseases was registered during the week.

*Irish Towns.*—The 155 deaths in Dublin, which corresponded to an annual rate of 20·3 per 1000, coincided with the number recorded in the previous week, and included 7 each from measles and whooping-cough, 4 from diphtheria, 2 from infantile diarrhœa, and 1 from scarlet fever. The 127 deaths in Belfast were equal to a rate of 16·9 per 1000, and included 7 from whooping-cough and 2 each from enteric fever and measles.

# Medical Diary for the ensuing Week.

## SOCIETIES.

**ROYAL SOCIETY OF MEDICINE**, 1, Wimpole-street, W.1.
*MEETINGS OF SECTIONS.*
**Friday, June 7th.**

LARYNGOLOGY (Hon. Secretaries—W. D. Harmer, Frank A. Rose): at 4.30 P.M.
*Cases and Specimens* at 3.45 P.M.
*Discussion:*
On "Warfare Injuries and Neuroses of the Larynx." The Discussion will be opened by Mr. Douglas Harmer and Dr. Henry Smurthwaite.
Members are invited to show interesting cases illustrating these conditions.

RÖNTGEN SOCIETY, at the Royal Society of Arts, 18, John-street, Strand, W.C.
TUESDAY, June 4th.—8.15 P.M., Annual General Meeting. Paper and Demonstration:—Mr. N. R. Luboshey: An Investigation of the Photographic Action of X Rays.

**WEST LONDON MEDICO-CHIRURGICAL SOCIETY**, West London Hospital, Hammersmith-road, W.
FRIDAY, June 7th.—8.30 P.M., Address:—Capt. D. M. Aitken: The Correction of Gross Bony Deformities resulting from War Injuries (illustrated by lantern slides).

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**POST-GRADUATE COLLEGE**, West London Hospital, Hammersmith-road, W.
MONDAY, June 3rd.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D Armour: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

**NORTH-EAST LONDON POST-GRADUATE COLLEGE**, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.
(Details of the Post-Graduate Course were given in the issue of April 6th.)

**ROYAL INSTITUTE OF PUBLIC HEALTH**, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—
WEDNESDAY, June 5th.—4 P.M., Lecture VI.:—Major M. W. Flack: The Health Aspects of Aeronautics. Followed by a Discussion.
In the Laboratories of the Institute.
Course of Special Demonstrations and Discussions on Venereal Disease in connexion with the work of the Venereal Diseases Department:—
WEDNESDAY.—2.30 P.M., Demonstration II.:—Major C. J. Macalister: Educational Propaganda in Relation to Venereal Diseases.

**COLLEGE OF AMBULANCE**, 3, Vere-street, Cavendish-square, W.
Course of Special Lectures and Demonstrations on Ambulance Work and First Aid (illustrated as far as may be possible and followed by a Discussion).
THURSDAY, June 6th.—4.30 P.M., Lecture IV.:—Col. W. Hunter: First Aid in Infectious Fevers.

## EDITORIAL NOTICES.

*In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.*

**It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.**

**It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.**

**Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.**

**We cannot prescribe or recommend practitioners.**

**Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."**

**We cannot undertake to return MSS. not used.**

*Offices:* 423, STRAND, LONDON, W.C. 2.

## Communications, Letters, &c., to the Editor have been received from—

A.—Mr. J. W. Ayres, Liverpool; Messrs. André, Sleigh, and Anglo, Ltd., Bushey; Aberdeen, City of, Health Department, Australian Imperial Force, Lond., D.M.S. of; Dr. H. J. Achard, Chicago.
B.—Messrs. W. H. Barrell, Portsmouth; Dr. J. Blomfield, Lond.; British Hospitals Association, Lond., Hon. Secs. of; Board of Agriculture and Fisheries, Lond.; Capt. W. G. Ball, R.A.M.C.
C.—Children's Country Holidays Fund, Lond.; Major F. Coleman, R.A.M.C.(T.); Dr. F. G. Crookshank, Lond.; Dr. S. D. Clippingdale, Lond.; Dr. E. L. Collis, Lond.; Mr. C. V. Cotterell, Lond.; Major G. H. Colt, R.A.M.C.
D.—Dr. A. E. Davis, Liverpool; Dr. L. Drage, Hatfield; Mr. J. Dawson, Lond.
E.—Dr. F. W. Edridge-Green, Lond.; Major W. M. Eccles, R.A.M.C.(T.); Surg.-Gen. A. Edmunds, C.B., R.N.; Dr. H. Elliot-Blake, Beer.
F.—Messrs. M. Favarger and Co., Lond.; Factories, Chief Inspector of, Lond.
G.—Major E. B. Gunson, R.A.M.C.; Dr. A. K. Gordon, Lond.; Dr. W. Gordon, Exeter; Mr. A. Grant, Lond.; Capt. H. Goodale, R.A.M.C.; Dr. J. Gairdner, Crieff.
H.—Dr. P. H.-S. Hartley, C.V.O., Lond.; Dr. G. T. Hebert, Lond.; Dr. T. B. Hyslop, Lond.; Dr. A. E. Hempleman, Edinburgh; Dr. E. W. Hope, Liverpool; Dr. W. E. Hume, Newcastle-on-Tyne.
K.—Dr. H. C. Kidd, Bromsgrove.
L.—Dr. A. E. Little, Leeds; Local Government Board, Lond., Sec. of; Local Government Board, Edinburgh; Dr. C. L. Leipoldt, Pretoria; Mr. H. L. Lloyd, Lond.
M.—Miss I. K. F. MacLeod, Edinburgh; Mr. B. McWilliam, Southsea; Dr. J. L. Martin, Chelmsford; Dr. D. McKenzie, Lond.; Comtesse Michel de Farrelong, Tours; Mexican News Bureau, Washington; Madras Medical Association, Sir William Milligan, Manchester; Medical Research Committee, Lond.; Medico-Legal Society of London.
N.—Dr. D. Newman, Glasgow; National Baby Week Council, Lond.
O.—Dr. J. A. Ormerod, Upham.
P.—Lieut.-Col. D'Arcy Power, R.A.M.C.(T.).
Q.—Mr. R. Quesada, Chesterfield.
R.—Mr. R. P. Ratnaker, Manchester; Dr. R. J. Rowlette, Dublin; Mr. H. Rundle, Southsea; Mr. D. D. Robertson, Lond.; Sir George Riddell, Lond.; Royal Society of Arts, Lond.; Royal Dental Hospital of London, Sec. of; Royal Institution of Great Britain, Lond.; Capt. H. C. Rook, R.A.M.C.; Royal Society, Lond.; Royal Sanitary Institute, Lond., Sec. of; Dr. V. Ronchetti, Milan.
S.—Dr. G. E. Shuttleworth, Lond.; Dr. H. Sharman, Lond.; Dr. J. S. B. Stopford, Manchester; Dr. C. Slater, Lond.; Capt. N. I. Spriggs, R.A.M.C.(T.); Mr. P. de Santi, Lond.; Messrs. G. Street and Co., Lond.; Dr. M. H. Smith, Portland; Dr. P. Stocks, Lond.; Dr. G. H. Skinner, Northampton.
T.—Major G. G. Turner, R.A.M.C.(T.); Capt. N. B. Taylor, C.A.M.C.
V.—Dr. H. Vignes.
W.—Mr. C. E. West, Lond.; Dr. E. Ward, Paignton; Prof. A. D. Waller, Lond.; Dr. S. A. K. Wilson, Lond.; Messrs. John Wiley and Sons, New York; Dr. J. A. Wilson, Warrington.

## BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.
Medical Diseases of the War. By A. F. Hurst, M.D. 2nd ed. 12*s.* 6*d.*

BAILLIÈRE, TINDALL, AND COX, London.
Treatment of Infected War Wounds. By A. Carrel and G. Dehelly. Translation by H. Child, Captain, R.A.M.C. Introduction by Sir Anthony Bowlby, K.C.M.G., &c. 2nd ed. 6*s.*

BALE, JOHN, SONS, AND DANIELSSON, London.
Mind and the Nation: A Précis of Applied Psychology. By J. Herbert Parsons. 7*s.* 6*d.*

DENT, J. M., AND SONS, London.
Dent's Medical Dictionary. By W. B. Drummond, M.B. Edin. 10*s.* 6*d.*

HEINEMANN, WILLIAM, LTD., London.
Elements of Field Hygiene and Sanitation. By J. H. Ford, M.D. 6*s.*
The Internal Secretions. By E. Gley, M.D. Translated from the French and Edited by M. Fishberg, M.D. 10*s.*
Medical Diagnosis for the Student and Practitioner. By C. L. Greene, M.D. £2 2*s.*

LONGMANS, GREEN, AND CO., London.
Organic Compounds of Arsenic and Antimony. By G. T. Morgan, D.Sc., F.R.S. 16*s.*
Principles of General Physiology. By W. M. Bayliss, D.Sc., F.R.S. 2nd edit., revised. 24*s.*
Edible Oils and Fats. By C. Ainsworth Mitchell, F.I.C. 6*s.* 6*d.*

MACMILLAN AND CO., London.
An Inquiry into the Analytical Mechanism of the Internal Ear. By Sir Thomas Wrightson, M.Inst.C.E. With an Appendix on the Anatomy of the Parts Concerned by Arthur Keith, M.D., F.R.S. 12*s.* 6*d.*
Fibroids and Allied Tumours (Myoma and Adenomyoma): their Pathology, Clinical Features, and Surgical Treatment. By Cuthbert Lockyer, M.D. With an Introductory Notice by Alban Doran, F.R.C.S. 6*s.*
Hysterical Disorders of Warfare. By Lewis R. Yealland, M.D. With Preface by E. Farquhar Buzzard, Lieutenant-Colonel, R.A.M.C. 7*s.* 6*d.* net.

MASSON ET CIE., Paris.
Blessures de la Moelle et de la Queue de Cheval. Par G. Roussy et J. Lhermitte. Avec une Préface de M. Pierre Marie. (Collection Horizon.) 4 fr.
Traitement Opératoire des Plaies du Crane. Par T. de Martel. 2nd ed. (Collection Horizon.) 4 fr.
Les Plaies de Guerre et leurs Complications Immédiates. Leçons faites à l'Hôtel Dieu. Par Henri Hartmann. 8 fr.

OXFORD PRESS WAREHOUSE, London.
Amputation Stumps, their Care and After Treatment. By C. M. Huggins, F.R.C.S. 7*s.* 6*d.* net.
The Prevention of Venereal Disease. By Otto May, M.D. 7*s.* 6*d.*
Diseases of the Heart, with a Chapter on the Electro-cardiograph. By F. W. Price, M.D. 21*s.*
Bipp Treatment of War Wounds. By Prof. Rutherford Morison. 2*s.* 6*d.*

# Appointments.

COLERIDGE, ALFRED, M.B., B.S. Lond., L.R.C.P. Lond., M.R.C.S. Eng., has been appointed Medical Officer to the Moretonhampstead District of the Newton Abbot (Devon) Union.

JOULE, JOHN, L.R.C.P. Lond., L.S.A. Lond., Medical Officer and Public Vaccinator for the Mullion District by the Helston (Cornwall) Board of Guardians.

PATEY, W., M.D. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Newton Abbot District of the county of Devon.

PLAYFAIR, E., M.B. Lond., Assistant Anæsthetist and Instructor in Anæsthetics at King's College Hospital.

# Vacancies.

*For further information refer to the advertisement columns.*

*Bedford County Hospital.*—Res. M.O. £150.
*Birkenhead Borough Hospital.*—Honorary Appointments.
*Bristol Royal Infirmary.*—H.P. and H.S. £120.
*Bury Infirmary, Lancashire.*—Jun. H.S. £200.
*Cambridge, Addenbrooke's Hospital.*—H.S. £300.
*Carlisle Non-Provident Dispensary.*—Res. M.O. £250.
*Chelmsford, Administrative County of Essex.*—Tuberc. Officer. £500.
*Chester Royal Infirmary.*—H.S. £150.
*Chichester, Graylingwell War Hospital.*—Res. M.O. £1 per day.
*Denbighshire County Council, Maternity and Child Welfare.*—Female M.O. £400.
*Derby County Council, Maternity and Child Welfare.*—Female M.O. £400.
*Derby, Eggington War Hospital.*—H.S. £315.
*Devonport, Royal Albert Hospital.*—Res. H.S. £200.
*Durban, Natal Corporation.*—Female M.O. Pract. £600.
*Egyptian Ministry of Education.*—Female M.O. £492.
*Great Northern Central Hospital, Holloway, N.*—Casualty Officer. £130.
*Hertfordshire County Council.*—Female M.O. £350.
*Hospital for Sick Children, Great Ormond-street, W.C.*—H.S. £100.
*Huddersfield Royal Infirmary.*—Res. H.S. £250.
*Leith Town Council.*—Female M.O. £350
*Liverpool Infirmary for Children.*—Res. H.P. £90.
*London Hospital, E.*—Asst. Aural Surg.
*Manchester City Sanitary Committee.*—Female M.O. £400.
*Manchester Corporation.*—Temp. Asst. Tuberc. Officer. £450.
*Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.*—S. £200.
*Northampton General Hospital.*—Junior H.S. £150.
*Roll of Honour Hospital for Children, W.*—Female Anæsthetist. £120.
*Royal London Ophthalmic Hospital, City-road, E.C.*—Asst. Surg. Also Sen. H.S. £150.
*St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, E.C.*—H.S. £250.
*St. Margaret's Hospital, Kentish Town.*—Visiting Oph. S. 20 gs.
*Scottish Women's Hospitals, St. Andrew-square, Edinburgh.*—Female M.O.'s for Greece. £300.
*Southampton Free Eye Hospital.*—H.S.
*Tottenham Education Committee.*—Temp. Asst. M.O. £500.
*Wigan County Borough.*—Asst. School M.O. £400.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Canterbury, at Bishop's Waltham, and at Galgate.

# Births, Marriages, and Deaths.

## BIRTHS.

DREW.—On May 24th, at Park-gardens, Glasgow, to Jean, the wife of Major (Acting Lieutenant-Colonel) C. M. Drew, R.A.M.C.—a son.

FLETCHER.—On March 5th, at Southampton, Beatrice Hillman, the wife of Captain William Fletcher, M.D., R.A.M.C., of a son.

KEYNES.—On May 24th, at Newnham Grange, Cambridge, Margaret, the wife of Geoffrey Keynes, M.D., R.A.M.C., of a daughter (prematurely), who survived her birth only a few hours.

SMITH.—On May 24th, at "Springhill," Malsemore, Gloucester, the wife of Captain Philip Smith, M.C., M.D., R.A.M.C., of a daughter.

STOKES.—On May 24th, at The Laurels, Sutherland-avenue, Bexhill-on-Sea, the wife of Captain K. H. Stokes, R.A.M.C., of a son.

TODHUNTER.—On May 24th, at The Lair, Pigeon Hill, Midhurst, Sussex, Majorie, wife of Captain J. R. A. Todhunter, M.B., R.A.M.C., of a daughter.

## DEATHS.

HOOPER.—On May 18th, at Heatherley, Sidcup, Kent, John Harward Hooper, M.D., F.R.C.S., aged 78.

MILLARD.—On May 22nd, suddenly, at Middlefield House, Pilrig, Edinburgh, William Wright Millard, M.B., C.M.

MOWLL.—On Saturday, May 25th, 1918, at Denynane, Hook-road, Surbiton, Fleet-Surgeon Richard Alfred Mowll, M.D., M.Ch. Queen's Coll., Cork, Royal Navy (retired), aged 72 years.

PORTER.—On May 20th, in London, Colonel Alexander Porter, M.D., F.R.C.S., I.M.S.

SPENCE.—On May 19th, at Nakuru, East Africa, from blood poisoning, Reginald Westmore Spence, L.R.C.P., L.R.C.S. Lond., of Guildford, Surrey.

STEPHEN.—On May 22nd, at Mont Dore Hospital, Bournemouth, Captain Lionel Henry Yorke Stephen, R.A.M.C., aged 49.

WESTLAKE.—On May 25th, at "Brockenhurst," Grimsby, Algernon Westlake, Major, R.A.M.C. (T.), aged 59 years.

*N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Short Comments, and Answers to Correspondents.

## THE EVOLUTION OF AMBULANCE WORK IN THE ARMY.

Surgeon-General G. J. H. Evatt delivered, on May 23rd, the second of the summer course of lectures at the College of Ambulance (3, Vere-street, London, W.). The burden of his discourse might, he said, be summed up in the words, "the value of the ultimate private soldier." He showed how in the past the conditions under which the soldier had to work were the reverse of those conducing to efficiency and health, and he illustrated his remarks by a reference to the unutterable misery prevailing on invalid ships returning from the American War of Independence. This was due not only to want of organisation and lack of knowledge, but often, in addition, to absence of sympathy. Happily for later generations, out of the misery of Scutari arose the wonderful fixity of purpose and the commanding power of a Florence Nightingale, which revolutionised the treatment of the sick and wounded soldier, and was one of the great factors in the establishment of the Army Medical School. From mere prescription writers Army doctors became health officers, and the medical school at Netley was founded. Surgeon-General Evatt went on to describe the dogged persistence with which Sir James Cantlie insisted on the training of medical students for Army work, and how opposition was gradually overcome by training men at Charing Cross Hospital and demonstrating to Lord Wolseley the benefit to the Army of an organised system of training. Meetings were held later at the Universities of Leeds, Manchester, Edinburgh, Aberdeen, and Dublin, resulting in drastic change in the teaching and training of the student. The excellent medical and surgical work being done to-day among our fighting forces was attributed by the lecturer largely to the work of Sir James Cantlie, Surgeon-General Sir Launcelotte Gubbins, and others who had helped to bring efficiency into the medical department of the Army. Sir Launcelotte Gubbins, who presided, also emphasised the awakening of the country to the need of army medical reform by the conditions prevailing in the Crimean war. M. Dunant, who originated the Geneva Convention, had, he said, admitted that his ideas were inspired by the work of Florence Nightingale. In the Federal armies of 1861-5 the lessons learned in field ambulance work were taken to heart and a sanitary commission was set up largely composed of women. In our own country improvement in the health of the soldier followed on the abolition of long service, the passing of the purchase of commissions, and the raising of the level of general education by the Act of 1870, which resulted in a lessening of crime and an increase in temperance in the services. In conclusion, the chairman paid a tribute to the hygienic work of Professor Edmund Parkes.

## A MODERN PARABLE OF THE SOWER.

ADAPTATIONS of the Jewish sacred writings to modern circumstances are apt to be either dull or offensive. We think, however, that Dr. John Dill Robertson's up-to-date Parable of the Sower, as it appears in Bulletin No. 1059 of the Chicago School of Sanitary Instruction, may be found useful by those who agree with him that sanitary instruction is even more important than sanitary legislation.

1. Behold the cougher went forth to cough.

2. And when he coughed, some germs fell upon the sidewalk and the feet of the pedestrians came and gathered them up and carried them into their homes.

3. Some fell into nostrils that were hard and unfruitful and forthwith a slight cold appeared. It was not worse because there was much opposition to them on account of the sterility of the soil.

4. And when the sun was up these colds were scotched, and because they had no roots these colds withered away.

5. And some fell in thorny places, such as those that have an immunity, and in this wise they were choked out.

6. But others fell into good ground for them, and brought forth much disease; some an hundred-fold, some sixty-fold, and some thirty-fold.

7. Who hath ears to hear, let him hear and go forth to the Health Department and view the great harvest of pneumonia, tuberculosis, lagrippe, and bronchitis, all of which is of record in the archives of the department.

8. Who hath ears to hear, let him hear that over 10,000 of our people were garnered during the year of our Lord 1917 from the seed of the cougher and sneezer, and now sleep with their fathers in their untimely sepulchres.

9. Be ye not of those who, having ears, hear not, and who, having eyes, see not those things, which we have herein set forth, and that so nearly concern their temporal health and salvation.

10. Muffle the cough, smother the sneeze and expectorate not in public places, to the end that divers and grievous disorders come not unto thee, nor unto thy neighbor.

11. And remember now the teachings of the Health Department that thy days may be long in the land which the Lord, thy God, giveth thee.

## CANCER PROPHYLAXIS IN MAN.

*To the Editor of* THE LANCET.

SIR,—I wish to reply very briefly to your editorial criticism (THE LANCET, May 18th, p. 725) of my paper in the *West London Medical Journal* on the above subject. With your statement that prophylaxis has not advanced beyond the stage of interesting speculation I am in agreement—indeed, I said as much in my paper—but that is quite an insufficient reason why the attempt to progress should not be made, especially in view of the fact that injections of placenta are harmless and painless. Similarly the fact that in animals the method is not invariably—though usually—successful does not militate against further experimentation. The failure against autologous implantation obviously does not apply; it is homologous grafting that is suggested. Your reference to my own trial of the method is incomplete in that you fail to note that following the injection of placenta I implanted a fresh graft of a clinically virulent (recurrent) carcinoma which was followed by a somewhat violent reaction. I am now able to add that the implanted portion subsequently shrivelled up and disappeared. I specifically stated that I claimed to *prove* nothing from this one experiment, but I thought that the occurrence of the reaction was suggestive. Obviously the only way in which the utility of placental inoculations in man can be studied is by clinical trial, and this is as far as the plea in my paper went. I am, Sir, yours faithfully,

Bedford-square, W.C., May 21st, 1918. A. KNYVETT GORDON.

## AS OTHERS SEE US.

IT is sometimes useful to see ourselves as others see us. Dr. W. H. Haupt writes to the *Journal of the American Medical Association* from Caterham, England—

"The thing that kills the British medical journals is the length of their articles. It almost seems that every writer makes it his business to make his articles as long as he possibly can instead of the reverse. I trust, therefore, that you will not allow that vice to creep into the *Journal*. A busy man has no time to be bored with such long articles."

We should not put the accusation of verbosity quite so broadly, but there is something in Dr. Haupt's criticism of us.

## A LOCAL BREAKDOWN IN MEDICAL BENEFIT.

AT a recent meeting of the Salop Insurance Committee the difficulty of securing the services of a doctor on the panel for Highley and district came up for discussion. It appears that the area is a remote mining district, with a population of about 1500 at the last census, on the borders of Shropshire and Worcestershire, some 7 miles from Bridgnorth, 8-9 from Bewdley, and 11 from Kidderminster. Of the two doctors who were in practice there one has been transferred to another part of the country and the other resigned from the panel a few months ago on account of ill-health. For a month or two there was actually no doctor for the panel patients. Arrangements have now been made for a doctor from Cleobury Mortimer (10 miles distant) to motor over three times a week to see the panel patients. The position is unsatisfactory in the case of emergency.

## THE AMERICAN RED CROSS IN PARIS.

FOR the convenience of our readers we append a directory of the medical division of the American Red Cross as at present organised in Paris.

*Department of the Medical Advisor.*—Head, Major Alexander Lambert, M.R.C., Medical Advisor of the Commission of the American Red Cross, 4, Place de la Concorde. This Department controls scientific research and publication activities.

*The Medical Bulletin.*—Edited by Mr. Watson, 6, rue Piccini. For the publication of current medical information to be circulated among the doctors of the American Red Cross and of the Allied Forces.

*Medical Library.*—Librarian, Mr. Estes, 12, Place Vendôme. For the use of research workers. A stenographer is employed for the convenience of doctors using the library. It is hoped that the library may become a meeting-place for doctors and a centre for information on the medical work of the American Red Cross and of the Army in general.

*Bureau of Medical Information.*—It is intended to build up a service for the collection of medical information of every kind.

*Research Committee.*—Controls all medical and surgical investigations supported by the Research Fund of the American Red Cross. Directs the monthly meetings of the Research Society. Chairman: Captain Walter B. Cannon. Secretary: Major Kenneth Taylor, M.R.C., 6, rue Piccini.

*Red Cross Research Society.*—Meets monthly to bring the American medical personnel into touch with the representatives of the Allied Armies. The society affords opportunity of presenting new work to an international body of physicians. Notices of dates and place of meeting are sent out by the secretary of the Research Committee.

*Medical Division, Department of Military Affairs.*—Head, Lieutenant C. C. Burlingame, M.R.C. Dealing with the medical work of the American Red Cross connected with the following services: American E.F. Hospitals, Medical Service for American E.F. Auxiliaries, A.R.C. Military Hospitals, A.R.C. Convalescent Homes and Hospitals, Medical Service for Civil Population and Dispensaries, Nursing Service (Military Affairs), Diet Kitchens, Artificial Limb Service.

*Women's Bureau of Hospital Service.*—Head, Miss Ruth Morgan. Chief nurse, Miss Julia Stimson. Has charge of the enrolment, equipment, care during illness, and all other matters pertaining to trained nurses.

## DOG-BITE STATISTICS.

THE total number of persons bitten by dogs in the Borough of the Bronx, N.Y., was 461, and Dr. S. Dana Hubbard, in the Health Department's Bulletin, analyses the kind of dog by which the injuries were inflicted. Fox terriers were credited with 56, collies with 47, "bulls" with 39, bull terriers with 29, Irish terriers with 28, white poodles with 23, and other breeds with less than 20 each, while the great unclassified "mongrel" claimed 119 bites. Dr. Hubbard admits that the figures give no exact indication of relative viciousness in the absence of a census of the various breeds, but, at all events, there are safer domestic pets than the collie, whose total of offences nearly equals that of the fox terrier, while the number of collies kept must be a great deal smaller than the number of fox terriers kept.

## AN IMPROVED TRUSS.

Captain A. H. Style, R.A.M.C., calls our attention to an improved form of truss, the patient being first fitted with a body spring and the pad afterwards moulded to the shape and contour of the ruptured parts. This is effected by first placing a sheet of rubber over a supporting frame covering the site of the hernia, and forcing on to it thin plaster-of-Paris by means of a specially constructed injector. Captain Style writes: "Attention is paid to the belt itself fitting the individual—a matter which is usually neglected; the pad is capable of minor adjustments, and, owing to the manner in which the pad is filled, the opening of the ring which holds it is adequately fitted and controlled. I may add that I have seen this form of truss recently fitted to sappers on full duty with satisfactory results. In the hands of a good instrument-maker the truss is quite effective, and is certainly an improvement on the commercial truss now in common use." The inventor is Mr. James Stott, Ravenscraig, Oakwood Park, Conway, North Wales.

## WAR BREAD.

*To the Editor of* THE LANCET.

SIR,—If it is blissful to be ignorant about bread you and Spriggs must be supremely happy. Or is there some other reason for your "work"? Yours,

Stansted. A. CROMLIN ROGERS.

*** We have put the title "War Bread" above this communication because we presume that Mrs. Rogers's reference is to an article by Dr. Edmund Spriggs published in THE LANCET of April 27th last, to which we called attention in a leading article in the same issue. We understand the suggestion to be that we and Dr. Spriggs, while thinking some things about bread, are paid by someone to say other things, an innuendo that has its conveniences for certain interests.—ED. L.

## CHILDREN'S COUNTRY HOLIDAYS FUND.

IT is hoped that about 15,000 of the most delicate children will be sent for a summer holiday by this fund during the year. As the difficulty of securing suitable accommodation in the country is serious, appeal is made for help in obtaining suitable cottage homes. Funds are required to meet the increased cost of boarding.

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Dr. James Gairdner, medical officer of health for Crieff (Perthshire), has received the congratulations of the council on completing 50 years of service.

Mr. G. J. Muriel, M.R.C.S. Eng., consulting surgeon to the Whitehaven and West Cumberland Infirmary, has been placed on the Commission of the Peace for the county of Cumberland.

*J. R. W. and Others.*—The appliances described by Captains W. H. Taylor and N. B. Taylor, C.A.M.C., in THE LANCET of May 11th for the liquid-tight closure of wounds have been exhibited at the Inter-Allied Conference on the After-Care of the Disabled Ex-Service Man during Whit-week in London, and can be obtained from Messrs. Arnold and Sons, 5 and 6, Giltspur-street, London, E.C.

## METEOROLOGICAL READINGS.

*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, May 29th, 1918.

| Date. | Rainfall. | Solar Radio in Vacuo. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---|---|---|---|---|---|---|---|
| May 23 | ... | 117 | 64 | 59 | 61 | 62 | Cloudy |
| ,, 24 | 0·15 | 74 | 62 | 49 | 50 | 53 | Overcast |
| ,, 25 | ... | 107 | 68 | 52 | 56 | 60 | Cloudy |
| ,, 26 | ... | 92 | 71 | 54 | 60 | 66 | Overcast |
| ,, 27 | ... | 120 | 69 | 50 | 54 | 60 | Fine |
| ,, 28 | ... | 105 | 68 | 53 | 56 | 61 | Overcast |
| ,, 29 | ... | 102 | 68 | 47 | 61 | 55 | Fine |

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.